

THE POULTRY BOOK



The Poultry Keeper . . . The Hen . . . The Feed !



THE JOB OF GETTING EGGS

FUNNY, ISN'T IT, how some folks look on this job of getting eggs from hens? Some will tell you it's all in the way hens are managed...others will tell you the only thing that counts is feed...while others would have you believe it's all in the hens themselves. But after all, the three of them...management...breeding...feeding...like the legs of a three-legged stool...are equally important. Each must do its part in the job of getting eggs from hens.

The POULTRY KEEPER

Management counts for a lot. Giving birds a good home, keeping things clean, following a definite feeding program, all have their influence on the way hens lay. Vigor is quickly torn down by poor management. Strong stock and good feed will not overcome poor care. It might be well to ask yourself, "Is poultry 'second nature' to me? Do I like to work around hens?" Good management comes much easier if you have an interest in your chickens and a willingness for hard work.

The HEN

Nature left alone eliminates the weak and reproduces the strong. Weak parent stocks lay few eggs which hatch poorly and produce weak chicks. Strong stock lays well...hatches well...lives well. Assist nature by breeding only from strong stock.

The FEED

Good feed brings out the best in breeding...the best in management. A ration giving birds all the things needed for health and all the things needed for eggs really gives birds a chance to do their best for you. Good feed with a tried and *proven feeding system* insures success for the poultry raiser who works and cares for the birds. *Good feed rewards good management and gets the best out of good breeding.*

What It Takes to Make Eggs

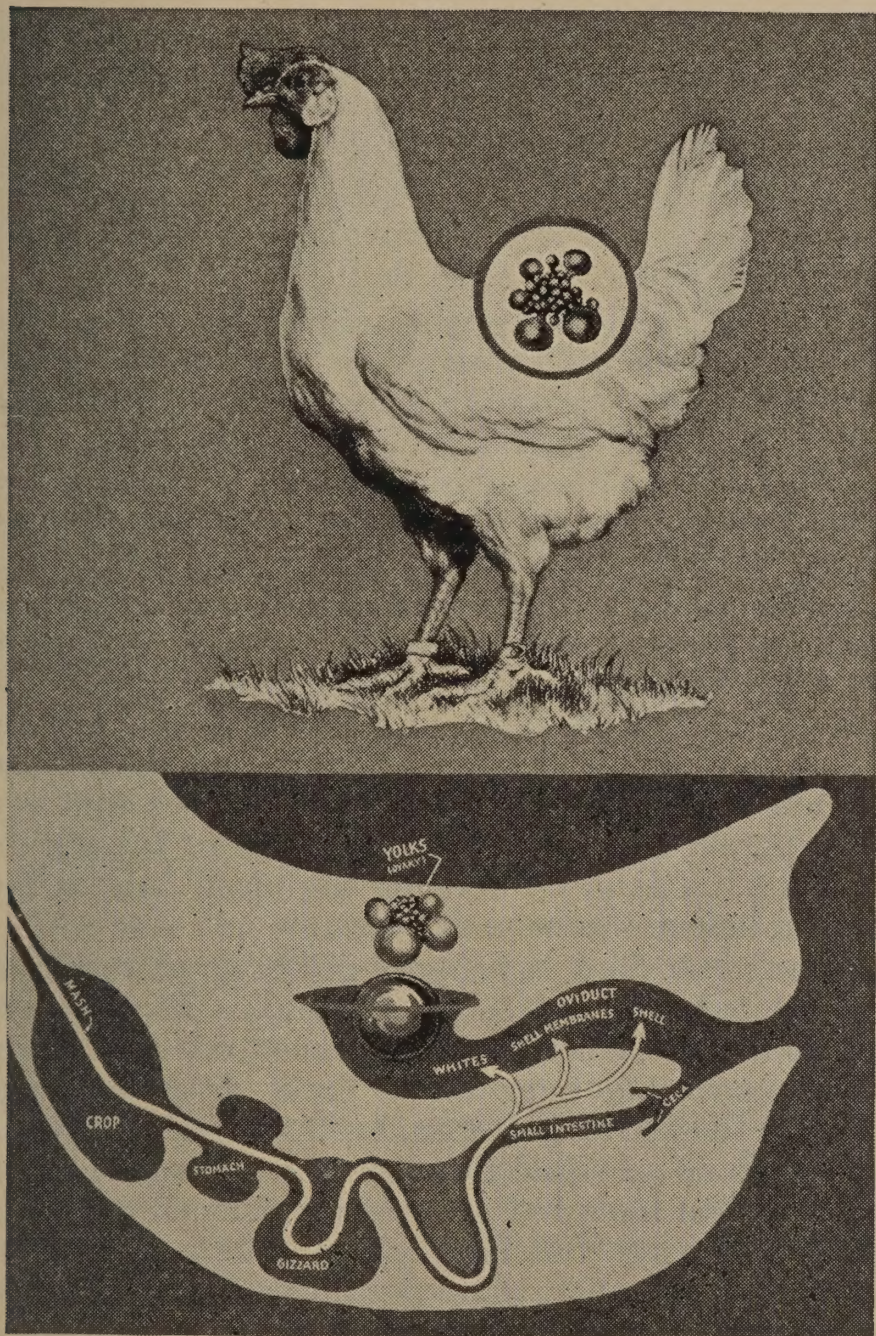
Yolk...white...shell...and that's all there is to an egg. It seems so simple and so natural that we are quite apt to believe that eggs are automatic with the hen. But that's wrong. It's a job of building...a job of putting together...started by nature, helped or hindered by man.

Take the yolk. Nature started it the day the hen was hatched. In her at that time are all the eggs (ova) she'll ever have. That's the part breeding takes in a hen's life-time laying ability. The developing of those yolks into finished eggs is where man helps or hinders the hen's work of putting eggs together as finished products. He helps or he hinders in the egg-making by the scratch and laying mash he gives her.

If you could look inside a laying hen and see what's going on, you would discover the "egg nest" (ovary), a mass of yolks, some no larger than a pin head and others ranging in size from a pea to a walnut. Perhaps in dressing a hen you have seen this cluster of yolks. They were put in her "egg nest" by nature and their increase in size was brought about by the things she got in her feed.

Scratch feed...grain...develops these yolks. But they can't be turned out as yolks alone. A hen can't lay half an egg. There must be a white, and there must be a shell.

There's a small amount of white and shell material in scratch feed, but not much. The hen will tell you that by the few eggs she lays. The Missouri State Poultry Experiment Station says that hens fed grain alone laid an average of only 5 eggs per month. Grain alone gives meager egg production because it builds mostly yolks and



The job that mash feed has to do as it passes through the hen is to build whites, shell membranes and shells. Yolks are in the hen from the day she is hatched and are developed largely by the grain feed. A hen has 14 days to make a yolk but only one day to make the white and shell. If anything is lacking, the egg cannot be laid, because a hen cannot lay an egg that is not complete. That's why the mash must be right.

stores fat on the body if there is a surplus. She can even draw on this surplus in developing yolks.

It takes 14 days for a hen to develop yolks... but only one day to develop whites and shells. This is why you find yolks of varying sizes in a laying hen but no whites and shells. The hen must build the white and shell daily.

Laying mash makes the whites and the shells. There is some yolk-making material in the mash feed, but fundamentally mash is the side of the egg-making ration that makes the whites and the shells. The white-making materials cannot be stored in reserve by the hen like the yolk-making material. She must get it day by day. And when she does, what a difference it makes in her job of putting finished eggs together. The Missouri State Poultry Experiment Station shows that hens fed a laying mash with scratch laid 17 eggs per month, or an average of 12 eggs more per hen than those which were fed grain alone. This shows that egg production hinges on the furnishing of the white-making material by keeping the mash part of the ration before the hens daily.

The same thing is brought out in an experiment conducted recently at the Oklahoma Experiment Station. 100 hens fed on a balanced ration of grain and mash laid over three times as many eggs during the fall and winter months when egg prices are high as an equal number of hens fed on grain alone. The hens fed on grain and mash not only laid more eggs, but larger eggs. Their eggs averaged over an ounce more per dozen than eggs from the birds fed on grain alone. Hatchability was also increased with the group fed on grain and mash.

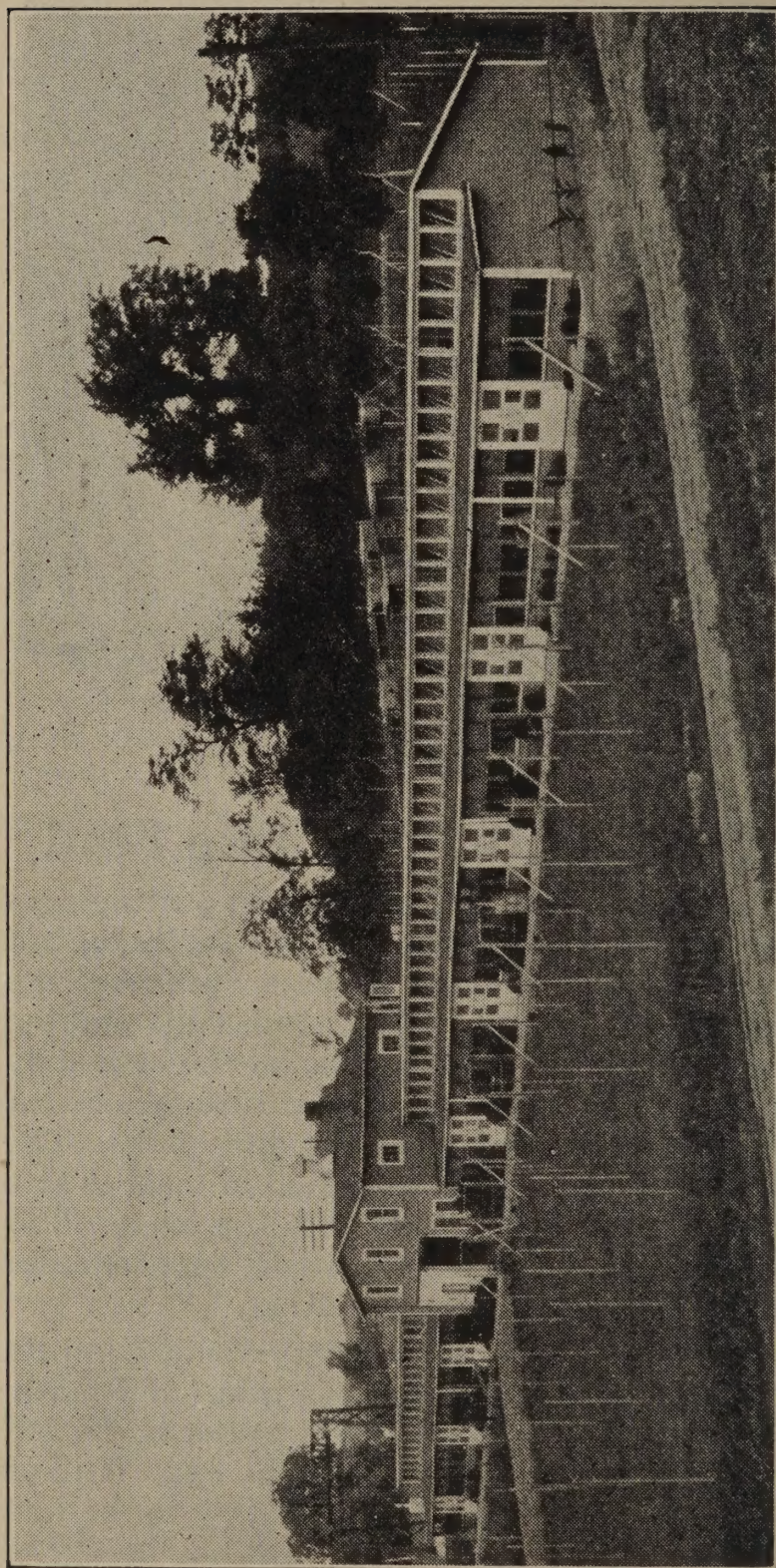
Strange it is that a hen can store the yolk-making material and not the white-making material. Every day she must get the white-making material. No white...no egg is the way she performs. The mash, therefore, controls her laying.



Putting Egg Builders Into Feed

Not only can you help your hens in putting eggs together by keeping mash feed before them, but you can help them out by making sure that the mash feed has plenty of white and shell making materials in it. Hens will tell you by the eggs they lay that some ingredients used in mashes are better than others in furnishing whites and shells. The amounts of certain ingredients used in mashes also determine what a hen can do with the mash. This is why hens do a better job of putting eggs together with one kind of mash than another.

As you know, a hen can eat only about a cupful of feed a day. That takes in both grain and mash. Three-fourths of this goes to keep up her body, and only one-fourth goes for building the egg. With as little of the feed going for eggs, it's easy to see just why it's so important that the mash has plenty of



One of the laying houses at the Purina Experimental Farm near Grays Summit, Mo. In this house 1,000 hens are on test year in and year out to help discover better laying mixtures for the thousands of poultrymen who

buy their feed in Checkerboard bags. Although the hens are kept under conditions as nearly like those on the average poultry farms as possible, every precaution is taken to assure the accuracy of the results of the experiments.

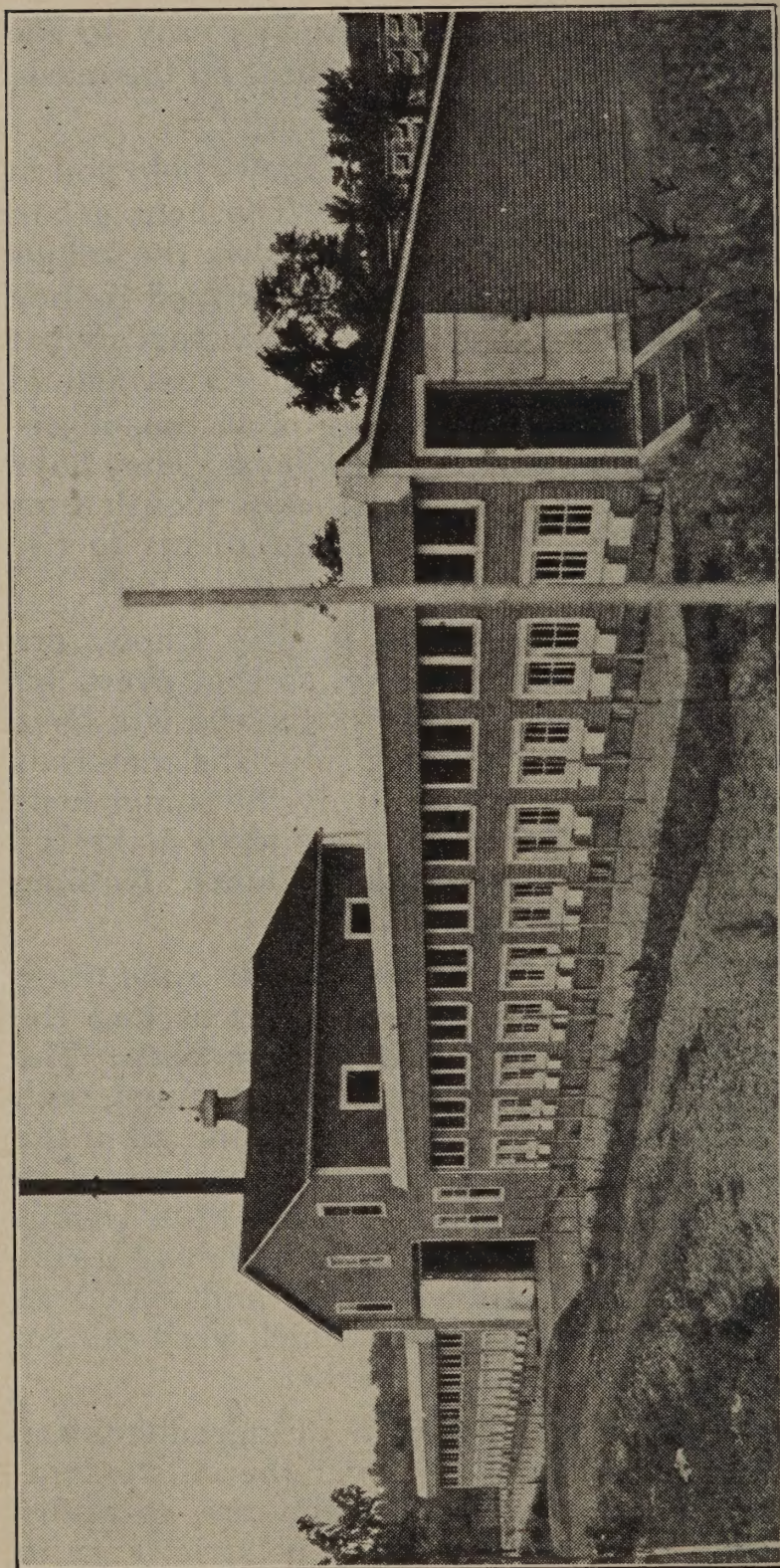
materials for whites and shells. It's easy to see why you can't afford to take chances on the mash. Every bit of it must be right.

Here is where Purina Laying Chows help you in helping hens put eggs together. The hens get in every ounce of Purina Laying Chows the things they would have you put into their feed if they could talk it over with you. In a way, that's what the Purina Laboratories and Purina Experimental Farm have done by their years of testing ingredients and combinations of ingredients. They have let hens tell them with egg production month after month, year after year, what ingredients to use and just how much of each to use in the feed.

The ingredients in Purina Poultry Chows are mixed over and over 960 times so that every bit of them will be alike...every day's feed will have the needs of the hen for body plus the materials for putting an egg together. Only the things hens ask for to keep up their bodies and to make the most eggs are in Purina Laying Chows. Nothing more...nothing less.

Purina buys grain in tremendous quantities, giving you the benefit of lower prices and the assurance of highest quality ingredients. The extensive buying keeps Purina in close touch with all markets, making it possible to obtain all of the different grains and other ingredients and to always have them on hand. Purina Mills manufacture such ingredients as alfalfa leaf meal, a rich source of minerals and vitamins, and soy bean meal, a fine source of protein which very seldom can be bought on the retail market.

As soon as the seals on a car of ingredients are broken, Purina chemists go over the entire shipment and take samples, which are carefully analyzed. The ingredients must be strictly up to



Hundreds of visitors at the Purina Experimental Farm have walked through this modern brooder house and watched 4,000 chicks eating many different rations. The chicks are separated into groups, each group being fed a

different ration. All groups are in plain sight of the visitor as he walks through the house. It is easy for him to see that some groups are doing much better than others, showing that there is a great difference in feeds.

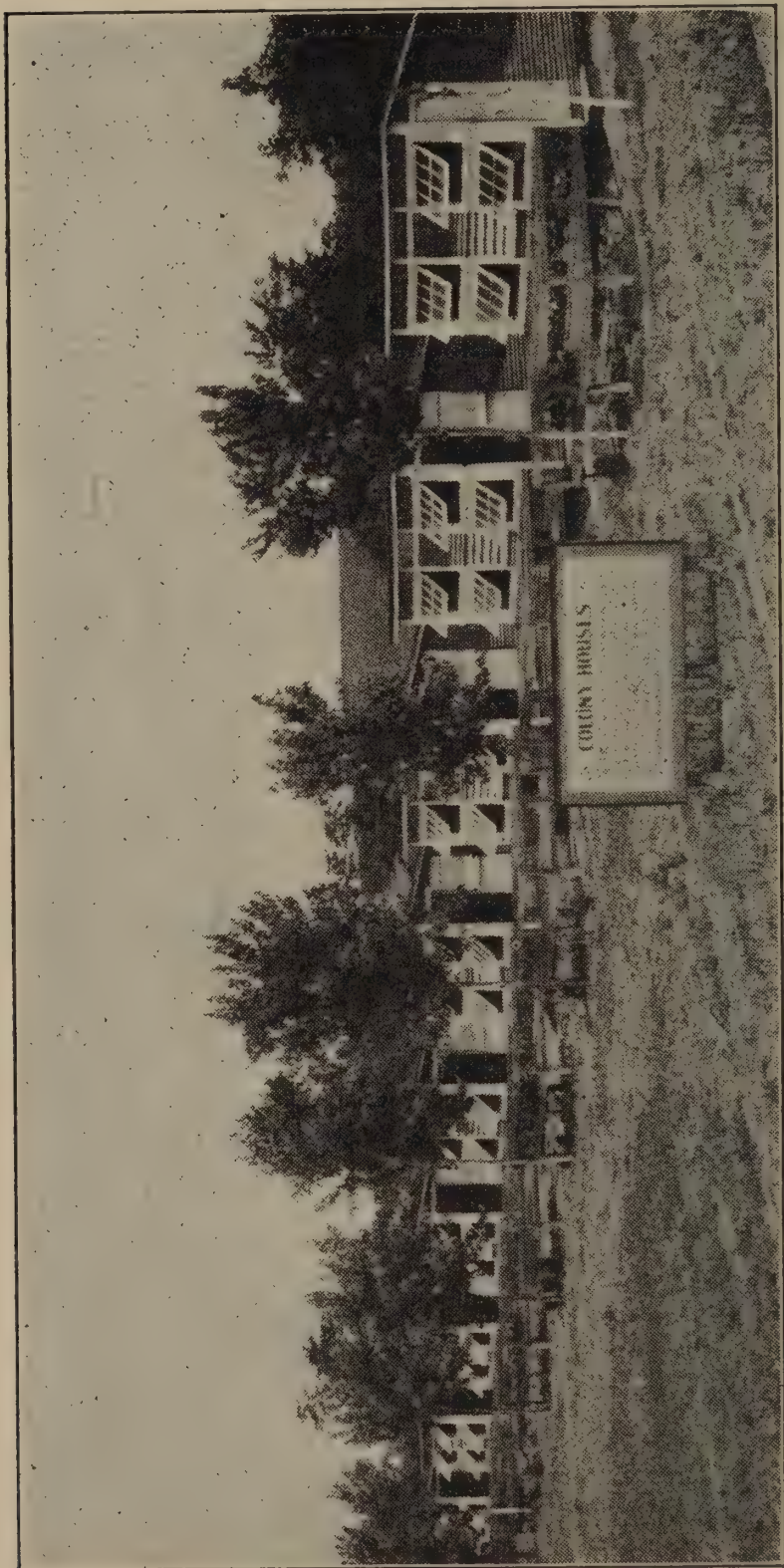
standard. If they fall below the required quality, they are rejected.

Various ingredients are constantly tested in the Purina Biological Laboratories to determine their value in the feeding of poultry. Take cod-liver oil, for instance...the naked eye cannot detect the difference between a grade potent in vitamin D, which prevents rickets or leg weakness, and one that is lacking in vitamin D. The difference is not even revealed by the color, flavor or odor. It can be determined only by actual feeding tests, which are carried on by the Purina Biological Laboratories to make sure that the cod-liver oil that goes into Purina Chick Startena and Purina All-Mash Startena is potent in vitamin D to prevent rickets and leg weakness in chicks.

Purina has the Experimental Farm to test and prove rations practically. Go there and you'll find dozens and dozens of different experimental feeds in the hoppers and troughs. You'll see no Checkerboard bags. Every bag is a plain gunny sack, each marked with strange letters and figures, such as "P24" and "2x413."

The feed that goes to the Purina Farm is not Purina feed, because it has not passed the test. There are very few of these feeds that ever will pass this test and deserve the Checkerboard on the bag and the chance to go into your poultry house.

The same feed that's in the Checkerboard bags on your farm today made these same trips to Purina's farm. These feeds have gone there first in plain bags for one whole year, and the story of what it has done is there on the record sheets. But this is not enough! For another entire year it must go through the same test. And still this is not conclusive enough! For the third year it must prove itself. Then, and then only, does it deserve the



Poultrymen know that experimenting with different kinds of feeds on growing chicks is dangerous business, yet experimentation is the only way to find out the best combinations of feed to keep chicks healthy and growing

rapidly. Purina experiments with starting and growing rations in these colony brooders just as you would do if you had the time and the money to spare. You don't have to experiment when you feed Purina Chows.

Checkerboard on its bag and the chance to go into your poultry yard to make money for you.

Even 1 per cent, more or less, of a certain ingredient sometimes makes a tremendous difference in the results produced by the finished ration. There is no guessing in proportioning the ingredients in Purina Chows, nor are they adjusted simply for convenience in handling.

The modern milling equipment of the Purina Mills makes it possible to proportion the ingredients to the ounce. This makes it possible to fulfill the exact requirements of a poultry ration formula to meet the exact needs of the chickens.

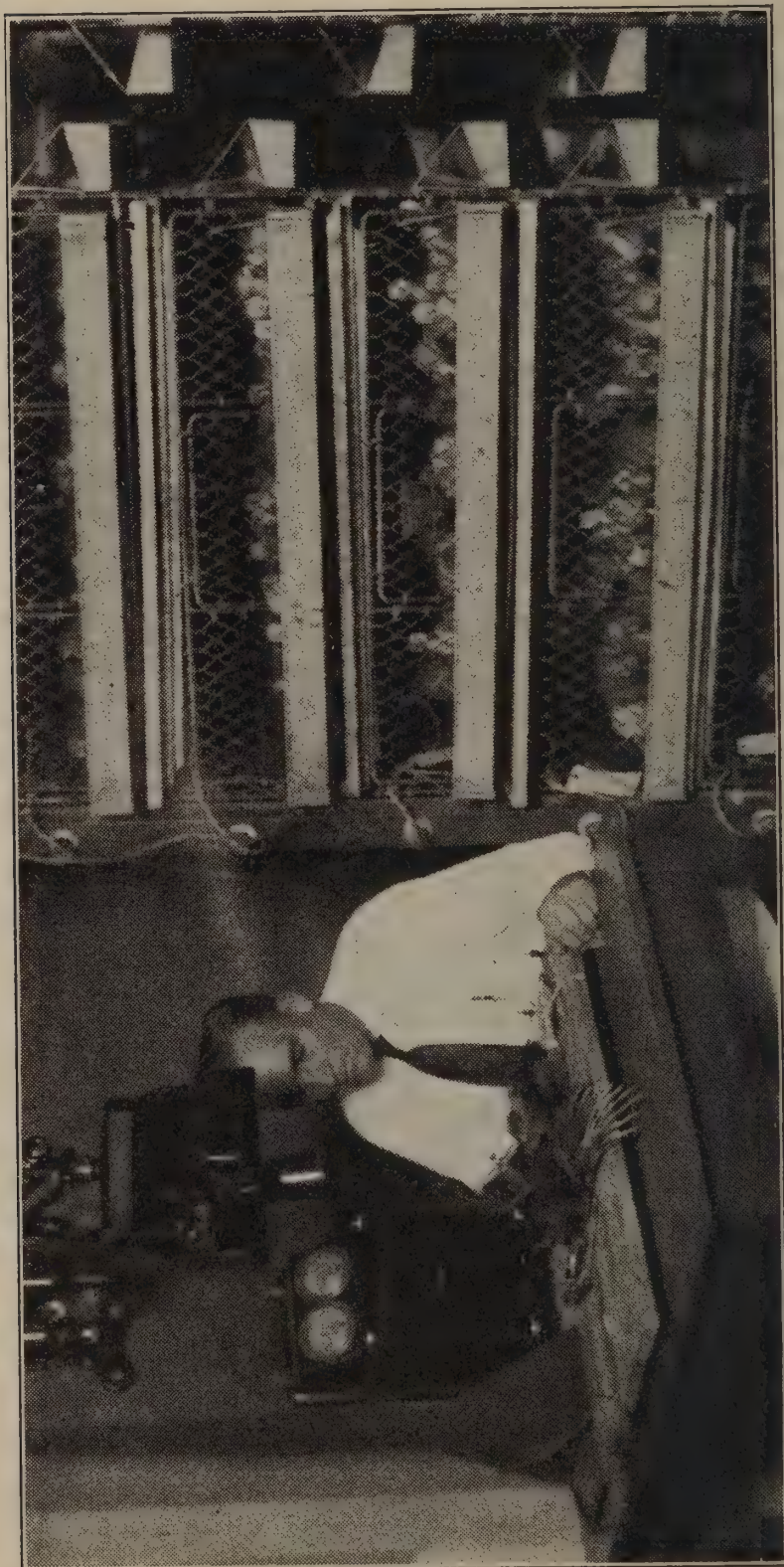
The doors of the Purina Mills are always open to poultry raisers. It is your privilege any time to be taken through any one of the mills located conveniently throughout the country. You can see with your own eyes the quality of the ingredients that go into the Checkerboard bag, and the exactness of balancing and mixing the rations. Purina's high standards for quality ingredients and Purina's exactness in milling and mixing a ration give you protection and the assurance of uniform results.

Just a Cupful of Feed a Day

It's the cupful a day that you've got to look at in a hen's ration...not 100 pounds, not even a quart...but a cupful.

In that cupful for life and egg production, what must a hen get? Proteins...a variety of them from both animal and vegetable sources to supply materials for the whites of eggs, and to build body tissue. The right combination of both animal and vegetable proteins must be in that cupful each day to keep the bird going...and produce eggs.

Each cupful must have enough fats and carbohydrates to supply the hen with body heat and energy and supply fats for making egg yolks.



No fault in any ingredient can escape the searching tests that are made on every new carload of ingredients received at any of the Purina Mills. Chemists analyze each ingredient. Many ingredients are subjected to further

tests by nutrition experts who feed them to chicks or rats. One of the experts is shown here taking an X-ray of a growing bird to make sure that the cod-liver oil it has been eating contained enough vitamin D to prevent rickets.

Fibre, too, must be in each cupful. Not too much nor too little. The right amount of fibre gives the feed "texture" or "bulk," which allows the digestive juices to work, keeps the intestines distended and moves the feed along the intestinal tract.

Minerals...a hen certainly needs them in her cupful of feed day by day. There are minerals in blood, in the tissues, in bone, and she needs minerals for eggs and egg shells.

Vitamins...nobody ever has reported seeing one...but they must be in that cupful of feed. Vitamins are recognized by what they do or by the changes in the birds' health caused by their absence.

Eggs...eggs, that's what you're after. Each cupful of feed a hen eats...her meal for a day...three-fourths goes to body upkeep. Nature takes care that the bird lives...before she produces. This leaves one-fourth of that cupful for egg production. It is in this quarter of a cupful that the difference in rations appears. Here is where feeding knowledge, quality of ingredients, testing and care in mixing come to the fore!

In every cupful of Purina Laying Chows are the years of careful selecting of ingredients, years of experimenting and testing in the Biological and Analytical laboratories and on the Experimental Farm, years of experience in milling and mixing. In every cupful there are many ingredients...each carefully chosen, each put in there with a job to do. These ingredients are minutely proportioned and mixed over and over, so that every bit of it will be alike. Suppose the one-fourth cupful is not thoroughly mixed, was mostly corn meal to-day? Then there can be no egg.

Science...brains...have bent every effort to make that quarter cupful of Purina Laying Chows uniform, complete...a builder of eggs.

Plan of Feeding Layers

To get eggs when you want them, feed your layers Purina Egg Chowder (mash) or Purina Lay Chow (mash) with Purina Hen Chow (scratch). Purina laying mashes and Purina scratch are balanced to give you the most eggs per 100 pounds of feed at the lowest cost per dozen.

The grains in Purina Hen Chow are always dry, clean, matured and uniform. However, if you have your own matured dry grain, you may feed it *with Purina Egg Chowder or Purina Lay Chow* as follows:

...with yellow corn, feed it once a day and Purina Hen Chow (scratch) once a day.

...with wheat, kaffir, milo, or barley, feed 100 pounds of these grains with 100 pounds of Purina Hen Chow (scratch) or 100 pounds of Purina Checker Chops (highest grade cracked yellow corn).

...with corn and wheat, feed equal parts.

Whatever you feed in the way of scratch, be sure to keep Purina Egg Chowder or Purina Lay Chow before birds at all times.

If you do not have home-grown grain, you will find Purina Hen Chow the most economical scratch feed to use.



The Way to Get Winter Eggs

The time to make money on eggs is in fall and winter. Most of the eggs at this period must come from well-developed pullets. The older birds quit laying and take time out for molting. It is for this reason that your flock should be two-thirds pullets and one-third hens. If your pullets are well-developed you'll have a good foundation for winter egg production.

Your pullets should have a comfortable, warm and dry house to live in. Don't overcrowd them. A 20x20 house will hold 125 birds comfortably.

The house should be well insulated to protect the birds from sudden drops in temperature. Dryness of the house depends on ventilation. Cover the floor with 4 inches of bright, clean litter. Whatever kind of litter you may choose, the main thing to guard against is moldiness and dampness.

Two other things that should be watched in fall and winter laying are water and oyster shell. A hundred birds laying 50 eggs a day use more than two quarts of water in making the eggs. If the water is icy, they do not drink enough. Keep the chill off and you'll get more eggs. Next to water, the cheapest egg-making material is lime for shells. Be sure to keep oyster shell in a wall hopper all the time.

To make eggs in fall and winter, birds need plenty of laying mash with enough scratch to hold their body weight. Keep Purina Egg Chowder or Lay Chow (mash) before them at all times and feed enough Hen Chow (scratch) or home grain to keep up their weight. Occasionally heavy egg production without enough scratch grain will cause the birds to grow thin.

Should this happen, increase the Hen Chow consumption—even to keeping a little in a hopper before the birds all the time. A crumbly, wet mash made up of 1½ pounds of Purina Chicken Fat Chow and 1½ pounds of Purina Chick Startena for each 100 birds may be fed at noon. This serves to increase the fattening materials going into the bird's ration, and actually increases total feed consumption, which is what the bird needs to make eggs.

Both Egg Chowder and Lay Chow contain well-cured alfalfa and a high-grade yellow corn meal. These supply the valuable vitamins that control health and vigor of the birds.

Arrange the mash feeders so that they will be out in the light and have them set about 12 to 18

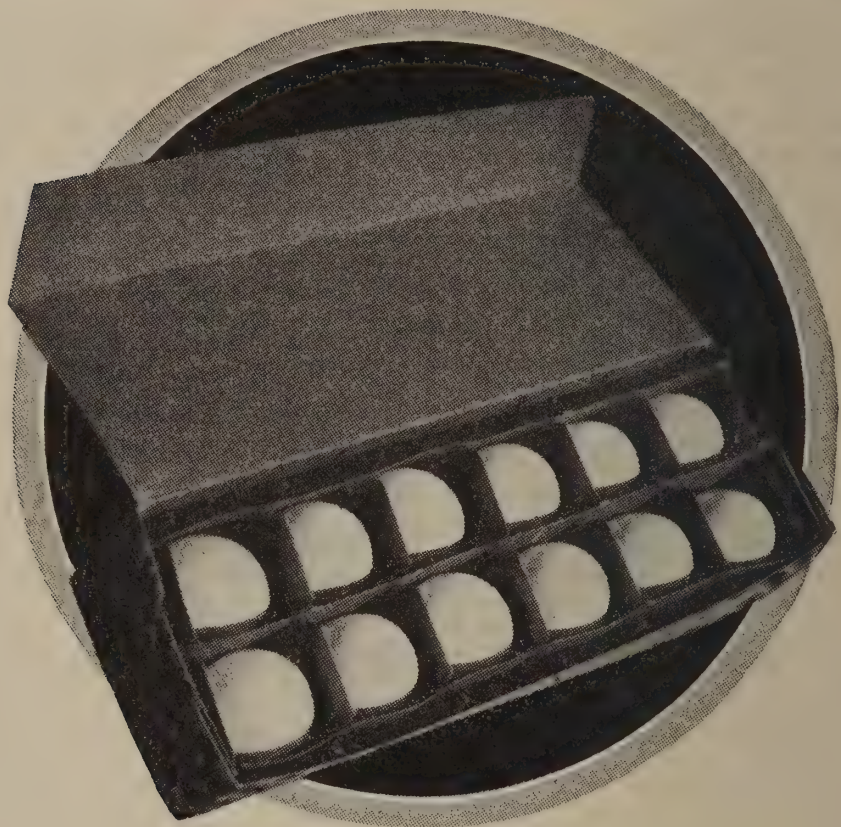
inches off the floor. At least three inches of mash hopper space should be allowed for each bird. The chief reason for plenty of feeding space is that there are certain hours of the day when the birds are particularly anxious to get at the dry mash hoppers. If there isn't room enough, some of the birds will be denied the mash they need.

Hen Chow (scratch) should be fed more in accordance with the condition of the birds, the breed, their rate of production and weather, than by set rule. Throughout the year under normal conditions the birds will consume equal quantities of Egg Chowder or Lay Chow (mash) and of Hen Chow, the amount being 10 pounds each of mash and scratch per day for 100 birds.

The quantity of Egg Chowder or Lay Chow consumed is ordinarily regulated by the quantity of the Hen Chow fed. Pullets, particularly, need more scratch grain than mash during the late fall and winter months to keep up both laying and body weight. While the quantity of Hen Chow for pullets will vary, it will normally fall within the range of from 12 to 14 pounds daily per 100 birds, not less than 3 pounds nor more than 4 pounds to be given at the morning feeding and 9, 10 or 11 pounds in the evening.

The quantity of Hen Chow (scratch) for old hens should be limited to keep them from becoming over fat. Three pounds in the morning and 7 pounds in the evening for each 100 birds is usually enough.

In the South, where winters are warmer, it is not necessary to feed as much Hen Chow as in the North, where winters are cold. The amount of Hen Chow fed should always be gauged by the "condition" or "body weight" of the birds. Then provide plenty of fountain space so the birds can have access to water all the time.



Lights Help Hens in Winter

Long winter nights cut down a hen's time to eat and lay. A hen's crop holds only enough feed to last a few hours, scarcely enough to do more than to maintain her body. The result is that laying suffers. By using artificial lights in the house, you lengthen the feeding period, and give your hens a chance to eat enough to do their job of laying.

On 14 flocks of layers in New Jersey, where lights were used, the average egg yield was increased to the extent that only 32 cents of each dollar of the receipts was paid for feed and lighting, leaving 68 cents net return out of each dollar. Where lights were not used for similar flocks during the same months, the feed cost took 61 cents of each dollar, leaving 39 cents net return.

Helping Hens to Lay in Summer

The hen's needs for laying are the same in summer as in winter, but she needs less feed to keep up body weight. That's why, about the first of June, the Hen Chow (scratch) should be cut down. From then on, during the summer months, only a little more than a gallon (six pounds) of Hen Chow a day should be given to each 100 birds, and that given only in the evening. Provide one pan or fountain of water to each 50 birds.

Green feeds are tempting to the hen after being shut up all winter, and if a hen is left free to forage for food, she fills up on these bulky feeds which carry practically no protein and other things necessary to produce eggs. It takes many times the amount a hen could hold in her crop of these green watery feeds to make plenty of eggs.

Grasshoppers, bugs and the like contain protein, but here again the size of the hen's crop prevents getting enough for making eggs, in addition to keeping up her body weight. It takes two or three pounds of bugs to give the hen the same amount of protein she gets from one-tenth pound of Purina Egg Chowder or Lay Chow, which is all a hen needs to keep up her body and to make an egg.

Hens often pass the mash feed right up and go straight for the green feeds and bugs. To get around this, many poultrymen keep their birds in the laying house until noon. It's a good plan to feed a moist, crumbly mash of Egg Chowder or Lay Chow just before they are turned out at noon. Give them as much as they'll clean up in 15 minutes. In this way, the hens get the things they need in their mash feed before they get out and gorge on "filler." Be sure to begin giving hens the moist mash before hot weather sets in. Feed it from June 1st to October 1st. Keep troughs clean.

Simple Rules for Feeding

As a general rule, *feed according to the condition of the birds*. If the birds are *thin* they need more *scratch grains*, because scratch grains are body builders. If the birds seem too *fat*, cut down on the scratch grain so they'll eat more mash and use up the *surplus fat* in making eggs.

Feeding Scratch in Litter or Trough?

During the winter some poultrymen feed scratch grain in the litter to provide exercise for their birds. When straw or similar material is used for litter, it should be four inches deep. Other poultrymen feed scratch grains in troughs. They usually feed 3 pounds of Hen Chow to each 100 birds in the morning and all the birds will eat at night. They empty the Hen Chow that is left in the troughs back into the bucket after the birds have gone to roost.

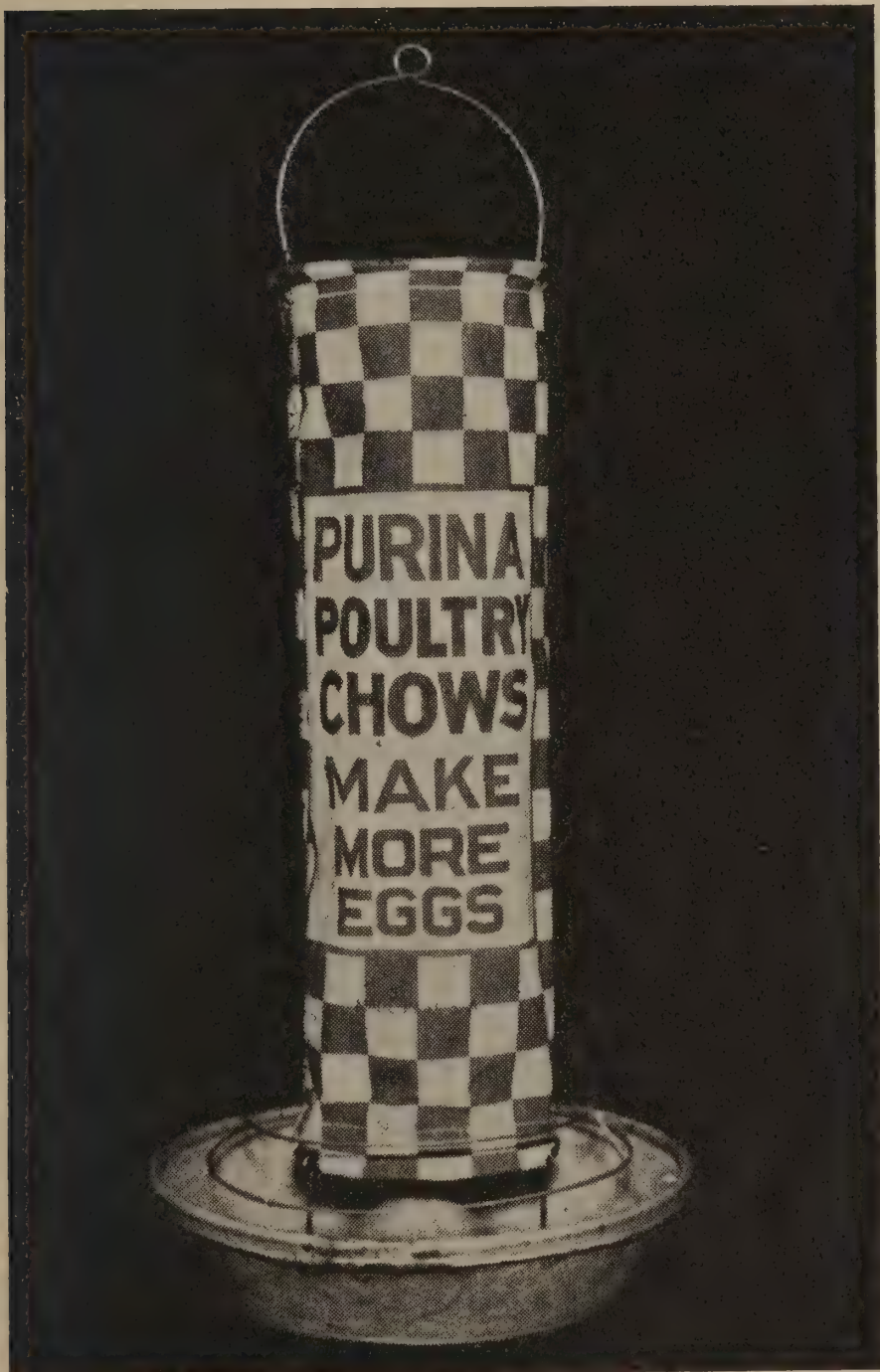
Some poultrymen combine both practices by feeding Hen Chow in the litter in the morning and in troughs at night.

Oyster Shell

A box of oyster shell should be available for the growing and laying birds at all times. Oyster shell supplies a cheap and easily available source of calcium, so necessary in producing shells for the eggs. A bird laying 160 eggs a year will consume about 3½ pounds of oyster shell annually. Do not confuse oyster shell with clam shells. Oyster shell has a dull, lime-like appearance. Purina Crushed Oyster Shell is packed in hen size and chick size.

Give Enough Mash Hopper Space

If you will look into the laying house soon after the birds are off the roost in the morning, before



The new wire guard on the improved Purina Mash Hopper makes it suitable for feeding growing chicks after four weeks of age as well as for laying hens. The guard keeps chicks out of the feed. It is easily removed for hens. By lengthening or shortening the wire which suspends the hopper from the ceiling, the height of the feeding pan above the floor can be adjusted for chicks of different ages and for old hens.

Read about it's other advantages on page 22.

Hen Chow has been fed, you will see the birds crowded around the mash hoppers. Again you will find them eating at the hoppers about 10 o'clock in the morning and from about 2 o'clock in the afternoon until the 4 o'clock feeding of Hen Chow.

In order that they may get all the mash they need *at the time they want it*, plenty of hopper space should be furnished.

Three Inches of Space Per Bird

Each bird should be provided with three inches of mash hopper space. In other words, a hopper 8 feet long, feeding from both sides, would provide 16 feet of feeding space, sufficient for 64 birds.

The New Jersey Station recommends even more feeding space—two 8-foot double hoppers to each 100 pullets. Better too much than not enough if you want eggs. The regular Purina Mash Hopper, which you may get at the Checkerboard Store, provides sufficient feeding space for 25 birds.

Advantages of Purina Mash Hopper

1. It holds 25 pounds and does not have to be re-filled as often as a wall or other small hopper.
2. Because it's round, it provides room for the largest possible number of birds to feed.
3. It's adjustable and can be made to feed down as desired.
4. It's up off the floor and doesn't get full of dirt, straw and filth.
5. It feeds a larger number of birds at the same time than most feeders which cost more.
6. It's made of heavy galvanized iron and 12-ounce duck—will last for years.

Purina Mash Hoppers may be bought at the Checkerboard Store. Each will pay for itself in a short time in feed saved and extra eggs produced.



Hens Need Water for Eggs

Water is mighty important in making eggs. Hens simply can't get along without it...so don't skimp on it. They need it for body, they need it for eggs. Aside from needing plenty of water for body maintenance, remember that two-thirds of the egg is water. Just listen to what the Missouri State Poultry Experiment Station says:

"A number of hens which had been furnished water at all times were given water only once a day, all they would drink, then the water removed. The results were that the egg yield was reduced 50 per cent. This reduction was the same in the different varieties."

Give your birds plenty of fresh, clean water, cool in the summer and with the chill removed in winter. Keep it before the flock at all times and place the fountains near the mash hoppers.



Mash and Scratch Must Be Right

Poultry mash must be right to digest properly upon entering the bird's digestive system. It must not be too fine or it will "puddle" when mixed with water and digestive juices. This causes the feed to digest slowly and in some cases to ferment, slowing up the process of getting egg-building materials into the blood stream. A mash must be coarse enough to allow the digestive juices to circulate around each particle.

On the other hand, a mash must not be so coarse that a bird can pick out the ingredients it likes best. Such a mash allows the bird to eat an unbalanced ration.

In scratch grains none of the ingredients should be so fine as to be wasted when scattered on the

ground or in the litter. Birds often refuse to pick up fine particles of grain bit by bit.

Scratch feed carries the responsibility of maintaining the body weight—so essential to year around laying. It is for this reason that a poultry raiser should make sure that any home-grown grain he feeds is well matured, dry and clean. You can feel safe and sure when you feed Purina Hen Chow for scratch feed.

Variety in Scratch is Needed

A variety of grains in scratch feed is needed. The feeding of unbalanced scratch grain is often the cause of digestive troubles. Easily digested grains are needed to keep up the body weight of the bird. Grains must be low in moisture to keep birds from having "soup crop" or diarrhoea.

Purina Hen Chow contains a variety of the highest quality grains, has a low moisture content and is triple cleaned. There is even a *cleaning after it's mixed* to remove the particles that have been cracked off in the mixing process which would be a waste to poultrymen.

It's easy to see why so many poultrymen discover that Purina Hen Chow lasts longer. Purina Egg Chowder and Lay Chow, too, are made of the highest quality ingredients, properly balanced, so they do a better job with fewer pounds of feed.

Change Feeds Slowly

Birds in production are sensitive to changes in feed. So, when changing from another laying mash to Egg Chowder or Lay Chow, *change slowly*. Take 7 to 14 days to make the change. At first add just a little Egg Chowder or Lay Chow to the old mash and gradually increase the amount added until the flock is eating Egg Chowder or Lay Chow straight.



Care of the Breeders

What you do in shaping up your breeders in the fall and winter months will count a lot in the hatches you get next spring. There's the job of weeding out the unfit and the care and management of those which have production records which meet with your satisfaction.

Cull Breeders Early

Many breeders do their culling about October 15th to 20th, and put their breeders into permanent breeding quarters. Moving them, cutting off the electric lights, which may have been used to keep them laying, and cutting out wet mashers, will throw the birds out of production.

In the selection of your hens, be sure they have vigor and nervous energy above all else. A hen that has a high egg record back of her, but was

herself physically wrecked in making that record, is worthless as a breeder. Keep in mind that the laying record, in this respect, tells only of her production and not of her vigor.

Watch Breed Characteristics

After vigor comes breed characteristics. There is no necessity for breeding from birds lacking in breed characters, such as red feathers in the white varieties, stubs on clean shanked varieties, and other standard disqualifications. Select hens for type, both as to body shape and skin texture. The body shape should be in your mind's eyes at all times. Keep it before you as an ideal to work towards. Strains are recognized by their uniform body conformations to certain standards.

How well you succeed in breeding from early pullets depends largely on the growth and development of the pullets. Pullets that have reached the point where body and sexual development are equal in balance may be used as breeders. In selecting breeders from the pullet flock, the main thing is to cull the flock closely and throw out all birds that are poorly developed or low in vitality.

Good Feed Essential

Hatchability depends not only on how the birds have been fed and managed during the breeding season, but how they have been handled all their lives. Thousands of hatcherymen are insisting that their flock owners feed Purina Egg Chowder (mash) and Purina Hen Chow (scratch) during the entire year because flocks fed and managed under the Purina plan not only produce eggs with high hatchability, but also the chicks from these flocks are stronger in vitality and grow into birds capable of producing more eggs.

A point to watch in the production of hatching eggs is the care of the eggs. Provide plenty of

nests, about 12 to 14 nests for each 100 birds. Use prairie hay, shavings or wheat straw for nesting material. Gather the eggs twice daily in clean baskets or padded buckets. Pack the eggs in a case with the little ends down, as soon as they are cool. Use standard egg cases, with cup flats and clean fillers.

In holding the eggs at home, keep them at a temperature between 40 and 60 degrees. About 55 degrees is the ideal temperature. Store the eggs in a dry, cool, well-ventilated basement, or a well-ventilated unheated room. Place the cases on a table or rack off the floor. Be sure the room is free from must or odors.

Ways to Handle Males

Keep the cockerels in individual stud coops along the wall with plenty of grain and water, releasing them at 4 p. m. to run with the hens. Then at night, pick them off the roosts and return them again to stud coops. Rotate the males from breeding pen to breeding pen, to eliminate preferential mating and individual lack of prepotency in the males.

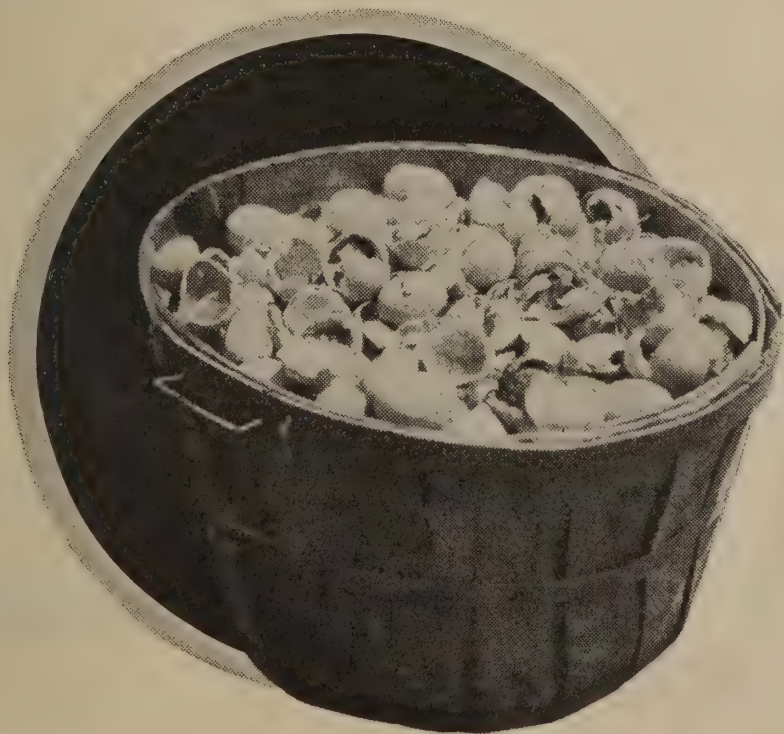
In large flock matings in which, for example, there are nine males being used, band three each with three different colored legbands, each day rotating the colors. Have the males with the same colored bands confined in individual stud coops with grain and water. Thus, every third day one-third of the males would be confined. From 15 to 25 birds per male in Leghorns and light breeds, and from 10 to 20 birds per male in heavies are the usual sizes of the matings.

Hens should be neither too fat nor too thin. They should be in production three weeks before you start saving the eggs for hatching. Often elec-

tric lights are used to start the birds laying in February for March hatching eggs. If not used to provide longer than a 12-hour day, lights will not injure a bird's ability to produce hatchable eggs throughout the spring.

Start Conditioning Early

A hen cannot be conditioned for a strenuous breeding season in a week or two any more than a cow can be fitted for the show ring in the same length of time. The ability of a hen to reproduce livable chicks after her own kind is determined largely by the way she has been developed and by the feeding management 3 months previous to the breeding season. Feed Purina Breeder Egg Chowder, a special laying mash for breeders, with Hen Chow to get breeders in good physical trim to put the spark of life into hatching eggs.



The Way to Grow Healthy Chicks

1. Move brooder house to new ground.
2. Thoroughly clean up and disinfect all equipment.
3. Carefully regulate ventilation and temperature.
4. Start with early-hatched, vigorous chicks.
5. Place no more than 360 chicks in a 10x12 brooder house.
6. For each 50 chicks, provide one drinking fountain and a two-foot Startena feeder. Provide larger feeders at 4 weeks of age.
7. Don't frighten or stampede chicks.
8. Teach chicks to roost early.
9. Feed Purina Starting and Growing Chows as directed on pages 48 to 50.
10. Separate cockerels from pullets. Market surplus cockerels as broilers as soon as possible.



Things to do for Chicks

Pipped eggs...chirping chicks. It's spring time...it's baby chick time. Which brings us back again to the same old problems...the problems of life...growth...and health. The problem of bringing as many as possible of these fluffy little masses through to next fall...to next winter...when they'll be layers...money makers.

You either hatch your own chicks or buy them. The trend seems to be more and more to the buying of chicks from reliable hatcherymen, paying enough to get good stock. This trend is natural, in view of the fact that the hatcheryman of today is one who has schooled himself along breeding lines to get better quality chicks from hatches. He culls hens and cockerels. He makes matings, supervises

sanitation and brings about improved management methods.

He insists on properly balanced, vitamin and mineral-rich rations for the breeders that are to produce vigorous chicks for his customers. He is alive to the fact that his bread and butter depend on satisfied customers. He realizes that he must send out vigorous, livable chicks, with real breeding back of them.

Solves Early Brooding Problems

He has studied and has mastered the problem of incubation. Through this knowledge of incubation, he is able to get more chicks off per 100 eggs. Then the care of the chicks after hatching...keeping them in the dark at the right temperature for the proper length of time...the grading of the chicks before they are boxed...keeping out cull stock that will never pay its first cost...are early brooding problems that the modern hatcheryman has taken off the shoulders of the poultry raiser.

This is why more and more poultry raisers are turning their breeding and hatching problems over to the experienced hatcher. In short, the hatcheryman today is doing just what each poultry raiser would do, himself, if he had the time, equipment and opportunity.

The Care You Give Counts a Lot

In the interest of raising all of your chicks this season, realize that you are in a business requiring as much thought and study as a merchant must give to his dry goods business. The chicks, the brooder stoves, the feed, are standardized, nationally accepted products—the same as shoes, clothing goods and other merchandise are products for the dry goods merchant. The dry goods merchant doesn't fail necessarily because of the products he handles, but rather due to some fault in his man-

agement. Good management will go a long way in putting your chick raising operation on a successful basis this season.

Little things count a lot in keeping baby chicks alive and getting them to grow big. Such a little thing as the temperature going a few degrees one way or the other usually plays havoc in the lives of chicks. Then there's the matter of keeping things clean, giving them air without exposing them to killing drafts, providing sunshine or its substitute, and dozens of other little things. They begin before chicks come and continue long after fluff has changed to feathers.

March and April Chicks Pay Best

Plan to have early chicks. You'll be chicks and money ahead if you do. You'll have pullets ready for laying in August, September and October and the broilers will be ready for market before it's loaded and prices drop. On the average, March and April hatched chicks pay best of all. Late or "hot weather" chicks are harder to raise, and are more susceptible to chick diseases.

Clean the Brooder House Thoroughly

You should plan to get things in readiness before chicks come. You'll want to clean the brooder houses used last year. Scrub the floors with soap and water. Drench the ceiling, walls and floors with a good, strong coal-tar disinfectant such as Purina Cre-so-fec. The job of getting the house in order should be completed at least two weeks before any chicks are put into the brooder.

It may be that you are planning to build new brooder houses this year. If so, you can get plans from your state college or county agent.

Provide plenty of ventilation in your brooder houses and avoid having chicks "gassed" because

Eggs That Hatch...Chicks That Live



of insufficient ventilation. See that the ventilator near the top of the front wall of the house is open most of the time. A hole in the rear wall under the eaves constructed the same as the one in the front, gives a more rapid exchange of air. Avoid drafts, directly on chicks—but don't skimp on fresh air.

The brooder house should face the south or southwest, except where strong prevailing winds are from this direction. It should be placed on dry, well-drained soil out of the direct path of storms and winds. If the skids are rested on flat stones there is less danger of rotting. Be sure the house sets level and has a double flooring with building paper between the floors.

You can't afford to overcrowd chicks in the brooder house. Crowded chicks often do all right for the first two weeks, but after that they lose their pigment, pick up colds, become stunted and never recover. Many cases of cannibalism can be traced to overcrowding.

Allow Three Chicks Per Square Foot

The smaller the brooder house is, the greater the danger of crowding the chicks. The 10 x 12 house will handle from 200 to 360 chicks. A 1,000-chick size brooder will care for 350 to 400 chicks; the 500-chick size will comfortably care for 250 chicks. Allow one square foot of floor space to every three chicks. It is unwise and costly to overcrowd chicks in the brooder house. Three chicks per square foot is the maximum—and if more room can be allowed more chicks and stronger chicks will be raised.

No matter what type of stove is used, coal, oil burning or electric, run them several days in advance to see that everything is in good shape and to make the adjustments on the thermostats.

To get the temperature up to 95°-97° Fahrenheit (when the thermometer hangs from the edge of the hover with the bulb three inches from the floor), will require several adjustments to allow the check draft to remain closed until the necessary heat is being produced. To start chicks off 95°-97° Fahrenheit brooding temperature is necessary. This temperature must be maintained for the first week, after which it can be allowed to drop to 88°-90° Fahrenheit. Lower the temperature as the chicks get older. Chicks should be hardened off by the time they are 6 to 7 weeks old, even though a low fire is run for several weeks thereafter.

From the time chicks are put into the brooder until they have learned what feed and drink are, the litter should be covered with paper or burlap to prevent chicks eating litter. The paper or burlap should be laid to within three inches of the stove. Pink building paper is ideal. You can remove the paper by the middle of the second day after feeding. When chicks are put under the canopy, a guard is necessary to keep them from huddling in a corner away from heat. Take a roll of one-inch mesh wire one foot high and circle the brooder, about 15 inches from the edge of the hover. This wire should be covered with muslin or, after it is in place, drape burlap bags over it from the outside to check all floor drafts.

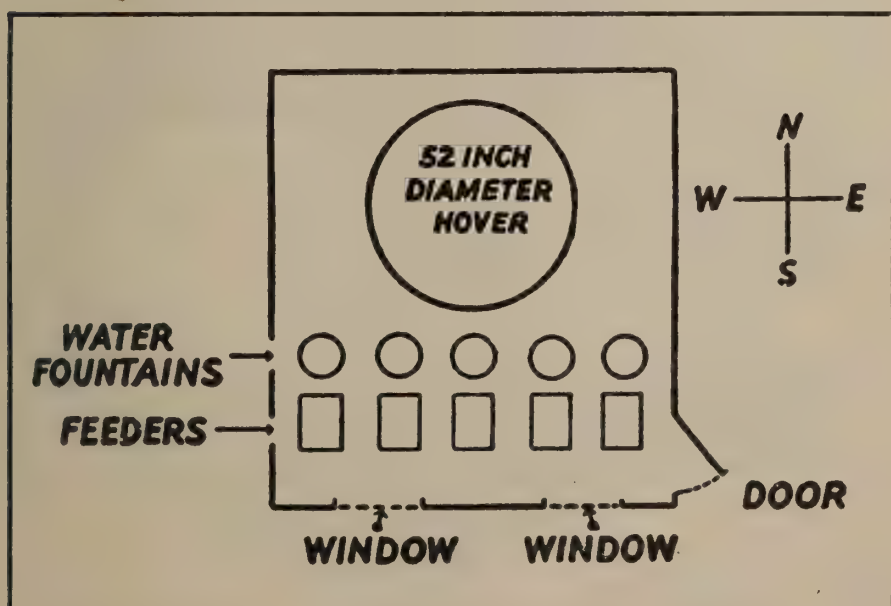
Peat moss or shavings make a suitable litter for chicks. Both are lighter than the droppings, which allows droppings to sift to the floor.

The third or fourth week, construct a roost of six perches across the back of the house. Use 1 x 2-inch material, lying flat, five inches apart, as the roosting poles, and 2 x 2-inch material for roost supports. Let it lie flat on the floor for several days. Later, raise the rear ends of the supports about six inches and fasten to a temporary cleat

on the back wall. Underneath the roost, fasten 1-inch mesh poultry wire, being careful to wire it in so that chicks cannot possibly get through, behind or under the roosts. A week later, raise the rear end of the roost supports about 10 inches. In another week raise the front end up so the roost is level, and about 15 inches from the floor.

Here's a practical arrangement of fountains and feeders in a colony brooder house. Note the feeders are placed running north and south so that the light, entering from the south, shines on both sides of the feeder. Chicks won't eat in the dark. Have one Purina Startena Feeder (2 feet long) and one drinking fountain with 10-inch diameter base (quart size or larger) for each 50 chicks.

The brooder house should be deeper (north and south) than it is wide (east and west). This allows the chicks to spend most of their time in the *front* of the house, *in the light* and *away* from the stove. The brooder stove should be placed slightly toward the rear of the house, as shown by the drawing below.



Move Around Chicks Quietly

It is important to be very quiet and gentle while working around the chicks in their early days. Any quick move or loud noise will cause them to race pell mell for a corner, piling up over one another. Once frightened, they stampede often and seemingly with little cause.

Two Systems of Feeding

Most poultry raisers have their own method of feeding, and it is generally recognized that no method of feeding will produce the same results for all poultry raisers. In other words, there's an art in feeding. In feeding Purina Starting Chows, we suggest either of two successful systems...the all-mash or the mash-and-grain system. Both are clearly outlined on pages 48 and 49 of this booklet.





Packed in Every Thimbleful!

Take an ordinary thimble...fill it up with feed...dump the feed into the palm of your hand. Not much feed, is it? Just a bit...but all a little chick can put in its crop in a day. Think of it...just a thimbleful...to live and get big on. What a job for that feed!

There's the job of making little bones...big bones...there's the job of turning the fuzz into feathers. There's the job of making little muscles...big muscles. There's the job of furnishing heat and energy. There's the job of keeping the spark of life alive. All of these things depend upon that thimbleful of feed a day.

When so much depends on so little...it must be right if a chick is to do a good job of growing and getting big. Every last bit of it must do something every day for the chick. There must be fats and carbohydrates to give the chick body heat and energy. There must be fibre...not too much nor

too little...to give the feed texture as an aid to digestion. There must be minerals to build bones and frame. There must be vitamins to keep the chick alive, healthy and growing day by day. Proteins are needed, too...both kinds of proteins... animal and vegetable proteins.

All of these things...proteins, minerals, vitamins, carbohydrates, fibre...can not be found in any one ingredient. They must come from many sources. For instance, animal protein must come from such products as milk, meat scraps, and the like. On the other hand, vegetable proteins must come from linseed oil meal, alfalfa leaf meal and other vegetable protein sources. Various kinds of vitamins that are needed can not be found in any one feed. Take vitamin A. It's to be found in yellow corn, wheat germ, alfalfa leaf meal, cod-liver oil and the like. Vitamin B, the most widely distributed of all vitamins, is to be found in yellow corn meal, wheat germ, wheat middlings. On the other hand, vitamin D is distributed in very limited amounts. It is the "sunshine" vitamin and cod-liver oil is the best source of this vitamin.

All of these things, minerals...proteins...fibre...carbohydrates and fats...vitamins...a chick needs, not every now and then, but every day. What a big job for a tiny thimbleful of feed! So much depends on so little...a chick's life and growth on a thimbleful of feed a day.

In each thimbleful of Purina Startena Chow there are 14 different ingredients. They are there to give chicks the things they need in every day's feed. The ingredients are mixed over and over, hundreds of times, so that every thimbleful of Startena Chow and All-Mash Startena Chow (mashes) or Chick Chow (scratch) will be alike.

The dried buttermilk in Startena Chow supplies the very best of animal proteins. Rich, green



The chick breasts you see here are from chicks of the same age, hatch and breeding stock. The one on the left was taken from a chick fed a ration lacking in vitamin D. The next was taken from a chick fed the same ration except that it contained cod-liver oil, the source of vitamin D. The difference in bone construction is brought out in the views showing the two bones stripped of their flesh.

alfalfa leaf meal furnishes lime and phosphorus, is a source of vegetable protein, furnishes vitamin A and gives ideal texture to each thimbleful.

Every thimbleful of Purina Startena Chow or All-Mash Startena Chow contains enough vitamin D tested cod-liver oil to prevent rickets or leg-weakness in the chicks and to insure sturdy bone development.

To make sure that the cod-liver oil which goes into Startena Chow (mash or all-mash) is highly potent in the sunshine vitamin...vitamin D...

every lot of cod-liver oil is tested separately by actual feeding tests under the supervision of the Purina Biological Laboratories. The cod-liver oil used in Purina is not judged by color, by smell, by taste—but by the only way the potency of vitamin D can be determined—actual feeding tests.

Yellow corn meal is present to supply vitamin A and carbohydrates. There is meat scrap, another source of animal protein. Wheat middlings, wheat bran and linseed meal supply carbohydrates, vegetable proteins and vitamin B.

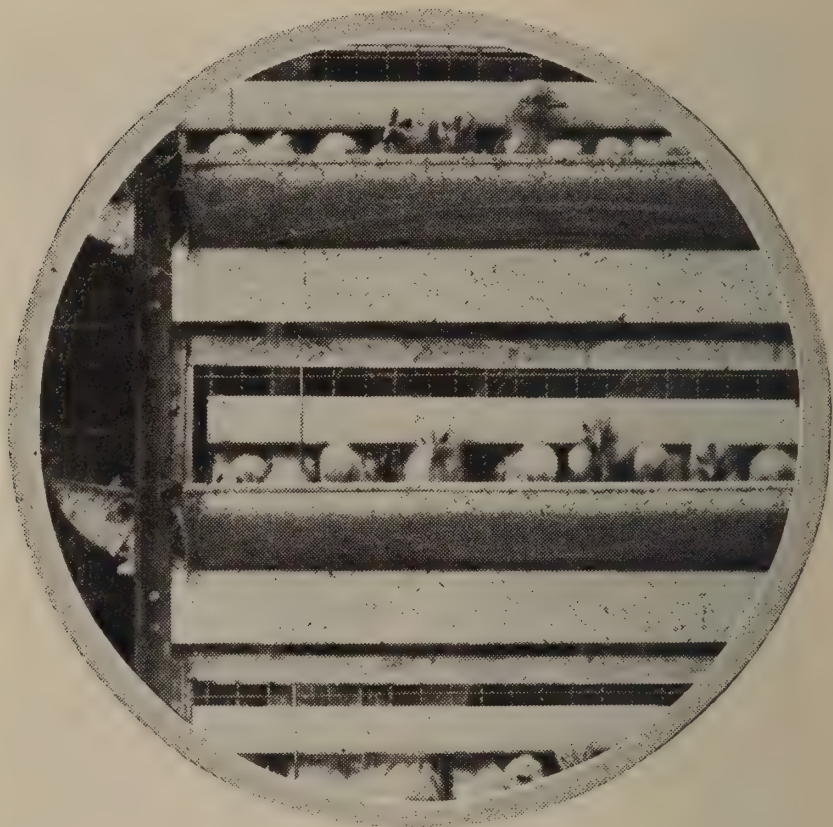
Corn germ meal, rich in vegetable proteins and wheat germ meal, which carries still more of the necessary growth vitamin B, is in every thimbleful of Purina. Oat middlings are rich in carbohydrates. Salt aids digestion. In every thimbleful of Purina, bone meal and calcium carbonate supply calcium and phosphorus for bones and blood. Everything is there...everything a chick needs for life and growth...in that thimbleful of Purina.

When so much depends on so little, you can afford to feed your chicks only the best...Purina Startena Chow (mash or all-mash). Everything a chick needs...cod-liver oil...dried buttermilk...alfalfa flour...granulated meat...wheat germ meal...linseed meal...these and eight other feeds are in every thimbleful of Purina Startena Chow.

A national feed survey on 1,834,513 chicks tells you the kind of a job these thimblefuls do. At six weeks of age...42 days old..., 92 out of every 100 Purina-fed chicks are alive and growing. And they weigh an average of one-fourth of a pound *more* than those chicks fed on other feeds. There's the story for you! The proof that the 14 feeds in Purina Startena Chow (mash or all-mash) actually give a chick the many, many things it must get from a thimbleful of feed.



Look at these X-ray pictures of two chicks. What do you see? A curved, undeveloped breastbone in the one at the left. A straight, fully developed breastbone in the one on the right. Trace the leg bones in the one on the left. Note the poor bone development at the joints. Now look at the one on the right. Yes, you can see the difference all right. The chick at the left was fed a ration lacking in vitamin D. The chick on the right was fed Purina Chick Startena, which contains cod-liver oil rich in the sunshine vitamin—vitamin D. After all, it does matter what you feed chicks. Feed Startena Chow or All-Mash Startena Chow and you'll not have to worry about keeping chicks alive and free from leg weakness.



Feeding in Battery Brooders

Many hatcherymen have storage or battery brooders for "hold-over" chicks. The chicks are kept in these batteries two or three weeks, then sold as started chicks. Battery brooders are also used by many broiler raisers in starting and growing broilers. Purina All-Mash Startena for feeding chicks in batteries fills the need perfectly.

Poultry farmers find it very profitable to separate cockerels from the pullets and sell them as broilers at the age of eight to ten weeks.

With the Purina system of feeding, it is possible to get these broilers to 1½ to 2 pounds in weight at eight to ten weeks, at a feed cost of less than 20 cents for a 2-pound broiler. Early broilers, particularly, usually bring a very good price—usually 30 to 35 cents a pound.

The following figures give you an approximate idea of the feed consumed and the weight of chicks at various ages. The better feeder will be able to get more feed into his chicks and make 2-pound broilers in eight to nine weeks and 2½-pound broilers in ten weeks.

Age	Feed Used	Weight of Broilers
6 weeks	2 pounds	1 pound
8 weeks	4 pounds	1½ pounds
10 weeks	6 pounds	2 pounds

One can figure his approximate cost of raising broilers using the following schedule as a basis:

Cost per chick.....	15c
Mortality.....	1c
Feed cost (approximate).....	20c
Fuel, litter and labor.....	5c
Depreciation of equipment (10%)...	2c
Interest on investment (6%).....	2c

Cost of 2-pound broiler, 8 to 10 weeks. 45c

The death rate is one of the most important factors which determine the amount of profit or loss in the broiler business. A little better feed often makes a big difference in the death rate.

Purina All-Mash Startena Chow is a ration made especially to meet the requirements for developing broilers. Chicks are ready for feeding on arrival. All-Mash Startena may safely be placed before the chicks from the very first, allowing them all they want to eat. Nothing else is needed except plenty of clean, fresh water to drink.

If you are going to ship your broilers alive, it is well to give a final heavy feeding of Purina Intermediate Hen Chow. This helps to prevent shrinkage in shipping alive.

Chicks raised in close confinement are subject to many ailments which can be avoided only

by careful management. A good feed is well worth the extra few cents it costs, because it saves many dollars in reduced death rate and faster growth. Here are some other important points to watch:

Avoid Over-Crowding. Keep no more than $9\frac{1}{2}$ chicks per 100 square inches of floor space for the first three weeks. At the end of the third week reduce the number of chicks one-half, keeping only $9\frac{1}{2}$ chicks for each 200 square inches of floor space. After the fifth week, thin the birds occasionally to keep them comfortable all the time.

Keep Temperature Even. In the batteries, follow the directions for temperatures given on page 48 for chicks of different ages. Room temperature in the heated room system of battery brooding should average 5 degrees lower than the compartment temperature. Keep the temperature steady. Sudden over-heating or cooling are very harmful.

Watch Ventilation. The battery compartments should have a good supply of fresh air properly heated, but all drafts must be avoided. The fans distributing warm air should never blow directly on the chicks.

Keep Air Moist. Heating air reduces the humidity. It is desirable to keep water or moisture available so the heated air can pick it up. Relative humidity should be over 45 per cent.

Keep Things Clean. Clean dropping pans at least every other day and disinfect them with Purina Cre-so-fec. Scrub feeding and watering utensils at least once a week and sterilize them with a Purina Chlorena solution.

Never Frighten Chicks. Work around chicks quietly. It is best not to admit visitors, but if they are allowed around the brooders, instruct them to keep quiet and avoid quick movements.

Let Chicks Sleep. Give chicks no longer than a 12-hour day and at least 12 hours of darkness.

PURINA POULTRY CHOWS

Purina All-Mash Startena Chow—A complete mash to be fed without scratch feed to baby chicks. Is excellent for feeding broilers straight through until marketed.

Purina Chick Startena Chow—Mash to be fed with scratch feed to baby chicks. Contains 14 different kinds of feed, including cod liver oil.

Purina Chick Chow—Small-size scratch for baby chicks. Made from a variety of several choice grains.

Purina Chick Growena Chow—Mash to be fed with scratch feed to growing chicks from end of sixth week to maturity.

Purina Intermediate Hen Chow—Medium-size scratch for growing chicks. Made of a variety of choice, cleaned grains.

Purina Egg Chowder—Laying mash for the most exacting commercial poultryman or breeder who has high-producing hens and practices good management.

Purina Breeder Egg Chowder—A special mash for breeders who keep their birds confined and want a high quality feed containing cod liver oil.

Purina Lay Chow—The most economical laying mash for all feeders except the specialized commercial poultrymen or breeders who properly use Purina Egg Chowder or Purina Breeder Egg Chowder.

Purina Egg Chowder (32%)—A high-protein mash to be fed with large quantities of home-grown grain.

Purina Hen Chow—Scratch grain for laying hens and developing pullets. Made from a variety of selected grains.

THE PURINA FEEDING A

In presenting these suggested feeding directions, we are mindful of the fact that every successful poultryman has his own method of feeding, and that no method of feeding will produce the

AGE	Poultry Mash	Scratch Grains	Management
1st Day	Chicks are ready for feed on arrival. After giving water with chill removed give them their first feeding of Purina All-Mash Startena Chow or Purina Chick Startena Chow.	Feed no scratch yet.	Leave chicks in boxes in a warm darkened room until thoroughly quieted down. Give chicks water with chill removed just before first feeding. Use water vessel that prevents chicks from getting wet. Brooder temperature 95° to 97° with thermometer bulb 3 inches above floor just outside edge of hover. Keep out drafts but supply fresh air.
2nd Day	Chicks hatched at home may be held 24 to 48 hours before being fed.		
All-Mash System of Feeding and Growing Chicks			
3rd Day to 6th Week Inclusive	Place All-Mash Startena in Startena Feeders or low troughs, keeping it before them all the time. Supply at least one inch of feeding space per chick. After the 4th week chicks are large enough to eat from regular Purina Poultry Chow Hoppers.	No scratch needed with All-Mash System. At beginning of the sixth week a light feeding of Purina Intermediate Hen Chow (scratch) should be given the pullets. Feed each evening only the first three days, then feed twice daily.	Maintain uniform, even brooder temperature. No drafts, but supply fresh air. Supply one drinking vessel for each 50 chicks. Disinfect drinking vessels daily with Purina Chlorene. Remove paper or sacks covering litter the 4th day. Keep things clean. Set water vessels on small low platform. Start chicks roosting when three weeks old. Reduce brooder temperature gradually to 90° by the 14th day. As chicks grow supply more feeding space.

ND MANAGEMENT PLAN

same results for all feeders. In other words we recognize that there is an art in feeding. We suggest either of two successful systems: the All-Mash system or the Mash-and-Grain system.

AGE	Poultry Mash	Scratch Grains	Management
Mash-and-Grain System of Feeding and Growing Chicks			
3rd Day	Feed Purina Chick Startena in Startena Feeders or low troughs, keeping it before them all the time; or feed five times a day, all they will eat in 15 minutes.	No scratch yet.	Supply fresh water with the chill removed. Be sure to supply ample feeder and water space.
4th Day to End of First Week	Continue keeping Startena before the chicks at all times, unless you prefer feeding five times a day, the "stop-and-go" plan of feeding.	The evening of the 5th day scatter a small amount of Purina Chick Chow (scratch) over mash surfaces, or on trays or papers. The 6th day feed Chick Chow lightly morning, noon and night.	Let chicks run in and out from under hover at will. Remove paper or sacks covering litter. Don't skimp on water or on watering vessels.
2nd Week	Keep Startena before the chicks at all times.	Beginning the 7th day, feed Chick Chow three times daily, all they will clean up in 15 minutes.	Continue with plenty of water. Set drinking vessels on low platforms. Reduce brooder temperature gradually to 90° by 14th day.
3rd Week to 6th Week Inclusive	Keep Startena in troughs or feeders before the chicks at all times.	Feed Chick Chow morning and evening, in troughs or trays—all they will clean up in 15 minutes. Starting the seventh week chicks can handle Purina Intermediate Hen Chow.	After 4th week give chicks more feeding space. Use Purina Poultry Chow Hoppers. Give plenty of drinking water. Reduce brooder temperature to 80° by end of 4th week. Start chicks roosting at 3 weeks.
Feeding Out Broilers			
6th Week to Market	Continue feeding All-Mash Startena to broilers until they are ready to market.	A final feeding of Intermediate Hen Chow to broilers to be shipped alive lessens shrink.	Keep broilers closely confined, but don't overcrowd. Keep water before them always.

THE PURINA FEEDING

Pullets Seventh Week to Maturity

AGE	Poultry Mash	Scratch Grains	Management
7th Week to Maturity	Beginning the 7th week, gradually replace All-Mash Startena or Chick Startena with Purina Chick Growena, taking at least one week to make the complete change over. Then keep Growena before the birds in open hoppers all of the time. (If chicks are kept indoors away from the presence of direct sunlight, continue on All-Mash Startena or Chick Startena until they are turned out of doors). Provide 2 inches of hopper feeding space per growing chick.	Feed Intermediate Hen Chow twice daily—morning and evening. During the early part of the growing period approximately half of the daily ration by weight should be Growena and the other half Intermediate Hen Chow. As the pullets approach maturity, gradually increase proportion of scratch to mash so they are consuming approximately two-thirds scratch and one-third Growena by the time they are 20 weeks of age. Change from Intermediate Hen Chow to full size Hen Chow (scratch) any time between the 12th and 14th week.	Keep oyster shell in hoppers before the birds all the time. Be sure there is plenty of fresh water before them always. Provide shade. Don't let birds get crowded in houses.

Laying Hens

Laying Hens—Fall, Winter, Spring	When pullets are 20 weeks old, gradually change from Growena to Purina Egg Chowder or Purina Lay Chow, keeping same before them at all times in open hoppers.	Feed 7 pounds Purina Hen Chow scratch in the evenings, 3 pounds in the mornings—10 pounds altogether daily to each 100 birds. If this amount of Hen Chow does not keep up body weight feed more; if they get too fat, feed less.	Watch body weight closely. Feed more grain if birds start to get thin or when laying heavily. Supply good quality Purina oyster shell and plenty of water to drink. Provide 25 feet of feed hopper space for every 100 hens.
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AND MANAGEMENT PLAN—Continued

Summer Feeding of Hens

AGE	Poultry Mash	Scratch Grains	Management
Summer Feeding of Laying Hens	Keep Purina Egg Chowder or Purina Lay Chow in open hoppers before the birds all the time. At noon, feed a moist crumbly mash made of 3 pounds of Chowder or Lay Chow, moistened with water, per 100 birds.	Feed 7 pounds Purina Hen Chow per 100 birds just before they go to roost. If you regulate the amount of Hen Chow, the birds will automatically eat the right amount of Chowder or Lay Chow. One quart of Hen Chow weighs 1½ pounds. One quart of Chowder or Lay Chow weighs one pound.	Be sure to supply plenty of cool, clean water. Keep oyster shell before the birds all the time.

Breeders

Breeders	Purina Breeder Chowder should be kept before the birds in open hoppers. From June 1 to October 1 give the same management as described for summer feeding of hens.	During the breeding season, January 1, to June 1, feed a little more Hen Chow than Breeder Chowder by weight.	Supply 25 feet of hopper space per 100 birds. Keep Oyster Shell before the birds all the time. Fresh clean water must be before the birds at all times.
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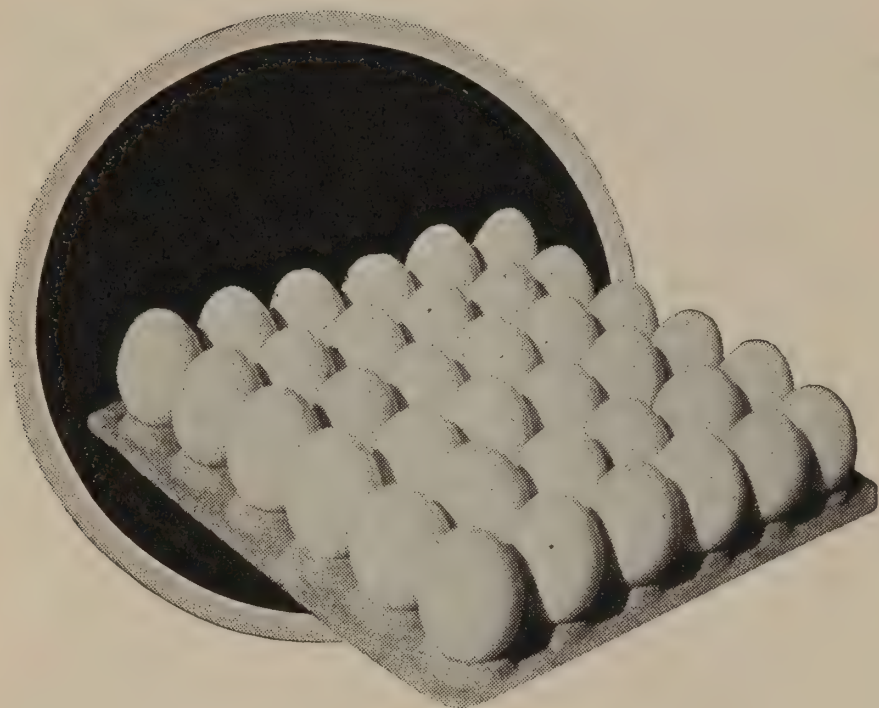
Pullets and Hens Under Artificial Lights

Pullets and Hens Under Artificial Light	Purina Egg Chowder or Purina Lay Chow should be kept before the birds in open hoppers all the time.	Feed 4 to 6 pounds of Hen Chow in the morning and 10 pounds in the evening per 100 birds. Lighter breeds require a larger proportion of scratch to mash.	Oyster shell and water need be before them always. Supply 25 feet of hopper space per 100 birds.
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Building Big Pullets That Lay Early!

1. Give growing chicks a clean shaded rape, alfalfa or clover range on which no chicks have been raised in the last few years.
2. Provide range shelter. The Connecticut type of range shelter is cheap and easy to build.
3. A supply of fresh, cool water should be kept in fountains near the feeders containing Growena.
4. Keep Growena before the birds at all times. Feed Intermediate Hen Chow (scratch) twice a day. Change to Hen Chow, 12th to 14th week.

Follow this plan and your pullets will grow. They'll reach maturity well-framed, fully developed, and ready to lay in 20 weeks. You needn't fear their going to pieces under the strain of early fall and all-winter laying.



Build Big Pullets for Big Eggs!

The pullet on which you get your money back early in the fall isn't an accident...she's just naturally built that way. Neither is it luck when the early laying pullet puts a big egg in the nest for you. That, too, is the result of building a pullet right. The small egg comes from the pullet that is small, thin and underweight. She isn't built for the job of laying. The pullet that has size not only makes her first trip to the nest earlier, but leaves a bigger egg in the nest for you. She's built right to do the job. As the pullet is built, so may you expect the eggs to be built.

It so often happens that when chicks are past the delicate baby chick age and farm work takes more time, chicks are left to do for themselves. Faith is put into range. Nature is called upon to do a lot of the feeding.

This let-up in the care of the chicks after they are started is costly. Growth is retarded. Health is impaired. Disease frequently takes hold and makes big inroads. Pullets drag on into the fall not laying—not paying. Money doesn't come in.

To get big pullets that lay big eggs give your chicks every chance to go ahead. Let them have the things they need to develop body frames, tissues, muscles and egg-producing systems. Watch them through the growing period closely. Guard against contamination or unclean range. See that they get plenty of air at night and shade during the day. Let them have ample housing space and feed aplenty.

Simple Range Shelters Pay

A shaded alfalfa or clover range makes a mighty good place to grow pullets. You may even plant the range with corn and let the pullets grow along with the corn. A sod range, if not swampy, works out fine for growing chicks.

Take time to provide good shelter. The Connecticut type of range shelter is very practical. It is easy and cheap to build, besides being easy to clean and to move. Should you want to use the brooder houses for the range, be sure to remove the windows to give chicks plenty of fresh air. A hundred pullets to the house is plenty. In crowded roosting, the birds "sweat." This saps their vitality. Spray houses for red mites at least twice during the growing period.

The lack of ample feeding and drinking space, along with crowded quarters, frequently leads to the vicious habit of cannibalism. Make sure that there are plenty of mash hoppers and drinking fountains for each range unit. The average poultry raiser would be safe in doubling the usual supply of both hoppers and fountains. More feeding and



drinking space and less crowded conditions are the surest means of preventing cannibalism.

It takes a certain amount of feeding judgment to feed growing pullets. When you are watching them from day to day, you can see how they're developing. You can regulate their mash to scratch by the way they are coming along. If they're not growing bodies—give them more Purina Growena Chow (growing mash) . . . if they're thin and flabby—give them more Purina Intermediate Hen Chow (scratch).

After chicks are past the starting period, keep Growena Chow before them all the time and feed Intermediate Hen Chow twice a day. They'll grow. They'll develop. Not only will the unproductive period be cut short, but your pullets will be of big

frame and fully developed. They'll be built for the job of laying...early laying...and winter laying.

The pullet that has frame, size and weight carries on laying through the fall and winter. She's in shape to stand up under the strain of turning out good-sized eggs. It's the little "knotty" pullet that lays before she has size which "goes to pieces."

Another thing you can't afford to overlook when it comes to building money-making pullets is that the big pullet lays more eggs. In the Canadian Egg Laying Contests on 5,000 birds, the big pullets of the light breeds laid 51 more eggs and eggs that averaged 2.2 ounces more per dozen. With the heavy breeds, big pullets laid 50 more eggs and eggs that averaged 1.2 ounces more per dozen. Here are the figures:

Leghorns	Production Per Year	Egg Weight Per dozen
Under 3 lbs.....	155.3	22.8 oz.
3-3½ lbs.....	166.1	23.4 oz.
3½-3¾ lbs.....	188.1	23.9 oz.
3¾-4 lbs.....	194.6	24.1 oz.
4-4½ lbs.....	207.1	24.5 oz.
Over 4½ lbs.....	207.0	25.0 oz.
Barred Plymouth Rocks		
Under 5½ lbs.....	177.0	23.3 oz.
5½-6 lbs.....	184.3	23.7 oz.
6-6½ lbs.....	186.7	24.0 oz.
6½-7 lbs.....	184.4	24.0 oz.
7-7½ lbs.....	184.0	24.2 oz.
7½ lbs. and over.....	217.5	24.5 oz.

The Ohio Experiment Station's test on early against late maturing pullets (all hatched April 7th) brings out that early maturing pullets not only lay more eggs, but lay them at a time when egg prices are high.

Look at the figures on the next page:

Month	Eggs		Price	Receipts	
	Lot 1	Lot 2	Per Dozen	Lot 1	Lot 2
Oct.-Nov.....	690	...	70	\$ 40.25	
December....	497	113	74	30.66	\$ 6.97
January.....	264	372	61	13.41	18.90
February....	368	475	42	12.88	16.63
March.....	1,054	974	30	26.35	23.35
April.....	1,116	1,041	26	24.22	22.59
May.....	1,109	977	25	23.07	20.32
June.....	895	669	26	19.42	14.52
July.....	806	455	33	22.17	12.51
August.....	638	282	38	20.22	8.94
September...	558	308	40	18.58	10.26
Total.....	7,995	5,666	..	\$251.23	\$155.99
Average.....	160	113	..	5.03	3.25

To build a pullet fit for the job of laying 150 to 200 or more eggs her first year, begin building for full body development. A bird of big structure and full body development is ready for early laying and fit to stand up under the strain of heavy egg production after she starts laying.

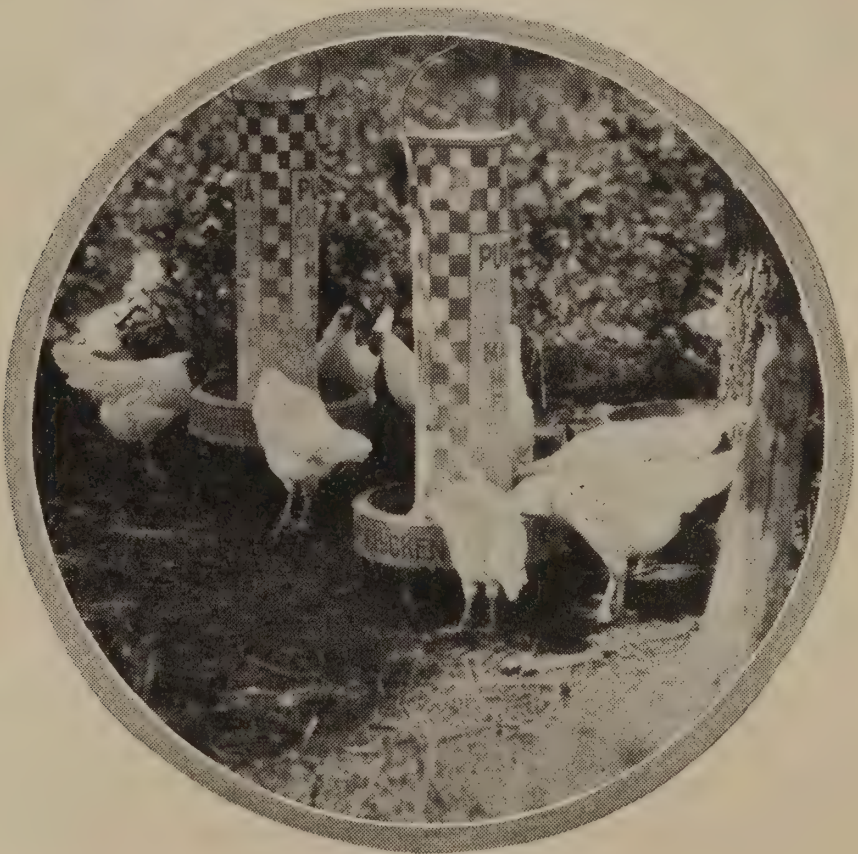
Purina Chick Growena Chow was developed after dozens of tests were conducted at the Purina Experimental Farm and is improved through similar tests. In a recent experiment of this kind, four pens of pullets with 180 birds in each pen were fed four different growing rations that differed only in one ingredient. Eight of the nine ingredients in each of the feeds were the same, but the pullets told the story of the difference in that ninth ingredient which contained most of the protein.

At 72 days the birds in pen number one averaged .97 lbs. The average weight per bird in pen number two was .86 lbs. In number three pen the average was 1.9 lbs., while number four pen

weighed 1.87 lbs. average. Not only was there a difference in weight, but also in feathering.

Even though the chemical analysis of these feeds was the same, the results when they were fed to the birds were vastly different. At the Purina Farm the chickens themselves decide upon what should go into the Checkerboard bag.

A national survey covering 262,455 pullets which had been fed Purina Growena Chow during their growing period—from the seventh to twentieth week—shows that the light breeds came into 50 per cent production at 5 months 28 days, and weighed an average of 3.95 pounds apiece, and the heavy breeds came into 50 per cent production at 6 months 14 days, weighing an average of 5.14 pounds each. That's building big pullets that lay early and often!



Care and Feeding of Turkeys



In raising turkeys, artificial brooding is becoming more prevalent and is usually more successful than brooding with turkey hens. The methods used in artificial brooding of poults are very similar to those used for raising chicks. About 100 poults should be placed in a unit and at least one square foot of floor space should be allowed for each poult.

Be sure the poults do not crowd together while in the brooder house. This is avoided by keeping an even temperature and providing good ventilation. A dim light hung above the hover at night seems to have a quieting effect on the poults. When the poults are first put in the colony house with the brooder stove, the temperature under the hover should be about 98° F., 3 inches above the floor.

The temperature should be lowered gradually until the poults are about 10 weeks old, when they require very little heat, especially in the daytime. Low flat roosts should be placed in the brooder

house when the poults are from three to four weeks old, to encourage roosting. The front roost should be six inches above floor and other roosts on the same level.

Limit Range at First

The 8 x 12 or 10 x 12 portable colony brooder house is very satisfactory for poults. Small range, if any, should be given the first six weeks. Many use ½-inch mesh hardware cloth on 2 x 4 supports for floors in the brooder house to prevent worms and blackhead. At the Kansas Agricultural College the poults are confined to the brooder house with the wire bottom floors and the wire bottom floor sunporch until they are 12 weeks old. At 12 to 16 weeks they are moved to a clean range. Provide three acres of range for every 100 poults.

The Nebraska Station, however, emphasizes that clean ground is more essential than a large range. They raised 70 turkeys on a gravel covered yard 24 x 50 feet, with a mortality of only one poult during the season. The plan of rotating the rearing ground or range is very satisfactory. With this plan the poults are kept on Lot No. 1 for three weeks or a month and then on Lots Nos. 2, 3 and 4 for like periods. This system of rotation greatly lessens the danger of contamination from parasites and diseases and also provides fresh, green food.

New Grain is Dangerous

This plan of confinement requires feeding the flock up to marketing. Do not yield to the temptation of turning them out in the fields after harvest. It is true they pick up considerable waste grain and bugs, but not enough to warrant the risk of their coming in contact with disease. Every year, as grain ripens, hundreds of turkeys die of diges-

tive troubles. Keep your turkeys away from grain fields and the threshing grounds. Feed Purina scratch grains or clean, sound, dry grain, if any is fed at all.

Because of the rapid growth of the young poults a high protein feed is required. For this reason the all-mash system of feeding turkeys, particularly the first six weeks, is very popular. Complete feeding directions are given on the next page.

How to Fatten Turkeys for the Market

The marketing season for turkeys is short, usually from the middle of November to the latter part of December. Most turkey raisers sell their birds alive to poultry dealers, who either dress them or ship them alive to city dealers.

Where birds are properly grown during the entire growing season, a special fattening period is not usually necessary, but many turkey raisers find that special conditioning will raise the market grade of their birds. When the condition of the birds shows that a special fattening period is desirable, a fattening ration may be made by mixing Purina Growena Chow and Purina Checker Chops into a crumbly mash.

A turkey will eat one-half to seven-tenths of a pound of dry feed per day. This fattening feed should be fed for about three weeks before marketing. If turkeys are thin, feed for four weeks. Give the turkeys all the water they can drink.

Not only will the turkeys make a good gain in weight, but in addition many of them will be rated as No. 1, whereas they would have graded No. 2 if not fed a good fattening feed.

PURINA PLAN FOR RAISING TURKEYS

AGE	Poultry Mash	Scratch Grains	Management
1st and 2nd Day	Poults are ready for feed and water on arrival. Leave poults in boxes in a warm darkened room until thoroughly quieted down, and then feed Purina Startena Chow. Poults hatched at home should be fed Purina Startena Chow when about 48 hours old.	Feed no grain.	Give water with chill removed just before first feeding. Use watering vessel that will prevent poults from getting wet. Watch poults closely and make sure each one eats. Brooder temperature should be 95° to 97° with the thermometer bulb 3 inches above floor just outside edge of hover.
3rd Day to 6th Week	Feed Purina Startena in Startena feeders or troughs, keeping it before them all the time. The "stop-and-go" plan of feeding five times a day, all they will clean up in 15 minutes, may be followed if desired.	Feed no grain till sixth week. Start feeding small amount of Intermediate Hen Chow in evening, beginning with sixth week. If Hen Chow is not used, give poults finely chopped green feed to supply vitamin A.	Supply fresh clean water with chill removed at all times in vessels disinfected with Purina Chlorena. Be sure to supply ample feeding and water space. Start poults roosting on low flat roosts by third week.
7th Week to Maturity	Change gradually from Startena to Growena, keeping it before them in hoppers all the time.	Feed Hen Chow in the evenings, all they will clean up.	Keep plenty of water before them.
Fattening	For a fattening ration use 200 pounds of Growena Chow with 100 pounds of Checker Chop (coarse steel cut yellow corn). Mix together dry, add enough water to make crumbly wet mash. Feed in troughs night and morning on range all they'll clean up in 15 or 20 minutes. Don't over feed first few days.		Give all the water the turkeys will drink. After turkeys have been on feed for a few days give them all the fattening mixture they will clean up.
Last 3 to 4 Weeks Breeders November 1st to June 1st	Purina Egg Chowder or Purina Lay Chow should be kept in open hoppers before the breeders at all times, beginning not later than November 1 and continuing through the winter.	Feed Purina Hen Chow (grain) morning and evening only what they will clean up in 15 to 20 minutes.	Select out the best pullets for breeding before marketing in November. Keep plenty of fresh water before them at all times. Keep a hopper filled with oyster shell before them.

Feeding Ducks

Start feeding when about 48 hours old. Their feed for the first three weeks is Purina Startena Chow. The mixture should be 5 pounds of Startena Chow mixed with 1 pound of second clear flour. Mix thoroughly while dry. Then add approximately 2 quarts of water to every 6 pounds of the dry mixture. This will make a heavy, doughy mass which should be fed on flat feeding boards. A plank 12 inches wide, with narrow strips of laths nailed on the sides to prevent the feed from rolling off the board, usually makes a satisfactory feeding board. This mixture should be fed four times a day, all the ducklings will clean up in 10 minutes.

Change from Purina Startena Chow to Purina Egg Chowder after the ducklings are three weeks old. Mix 5 pounds of Chowder with 1 pound of second clear flour and add 2 quarts of water. Feed three times a day.

When ducks are 10 to 11 weeks old they should average five and one-half pounds dressed and will have consumed approximately 25 to 27 pounds of feed. They should be marketed at 10 to 11 weeks before a new crop of pin feathers starts.

For laying ducks mix Chowder and second clear flour same as above. Feed this mixture three times a day, as much as they will clean up in 10 or 15 minutes at each feed. Keep water fountains full.

Feeding Game Birds

Satisfactory rearing of wild birds under domestic conditions calls for an environment very similar to their wild state. Young birds grow rapidly and should have a balanced ration adequate in vitamins and minerals to develop the bony frame-

work. Plenty of protein also is necessary in order to build muscles and produce strong bodies.

Artificial incubation and brooding of pheasants and other game birds may be handled successfully, although the percentage of hatch usually is not as high as when the natural method is used. Bantam hens, preferably Cochins or Japanese Silkies, make the best foster mothers for young game birds. Lice and scaly legs are disastrous to young birds. The hens should be dusted with Purina Lice and Flea Powder both before and after the hatch.

In rearing game birds, start feeding them Purina All-Mash Startena Chow when they are 24 hours old. For the first week feed five times each day, just what they will clean up in 15 minutes. From the beginning of the second week feed Purina Chick Chow (scratch) twice daily and keep the mash before them all the time. The feed hoppers should be placed in waterproof shelters and should be so constructed that the young cannot get into them. Remove any sour or contaminated food.

Just preceding the first feeding the young birds should be given clean luke-warm water to drink. Keep water before them all the time, using watering vessels similar to those used for chicks. Clean and disinfect all drinking vessels thoroughly with a Purina Chlorena solution.

The mating season is in the early spring, and from four to six hens may be mated with a cock. Hens are most productive when they are two and three years old. It is best to mate good hens with a young well-developed cock.

Place Purina Breeder Chowder before them in hoppers so they have free access to it all the time, and feed Hen Chow (scratch) morning and evening. These furnish the breeding stock with the things needed to produce strong, sturdy young. Breeders should be kept as quiet as possible.



An Easy Way to Cull

No flock is completely free of hens that are eating good feed and paying nothing for it. Even in the most carefully bred flocks, there are hens which are not paying their way. So often a flock will fail to make money simply because the money made by the layers goes to pay the feed costs of those which just seem "to live to eat" and forget all about laying.

It is easy to pick out the loafers. Trapnesting has revealed certain outward physical characteristics which distinguish the good from the poor layers. With a knowledge of these characteristics, all you need is confidence to tackle the job. Many a poultry keeper "has gone broke" simply because he lacked the courage to start this job of culling.

On the other hand, many more have switched their flocks to a real money-making basis by taking a hand at culling.

Give Birds a Chance

Before you begin to cull be fair with your birds. Give them every chance to show their ability to lay. This means giving them the materials from which eggs are made. Most extension workers and county agents insist on this before they undertake the culling of a flock. They usually ask that the flock be fed a balanced egg-making ration for 60 days before culling. In view of this, give your birds Purina Egg Chowder or Lay Chow and Purina Hen Chow two months before you begin culling.

The shrewd poultry raiser does not make culling one grand clean-up—but looks over the flock every day with a view of cutting down the feed bill by getting rid of unprofitable birds.

Cull Often After May

In May, the average flock reaches the peak of production, so go over the flock thoroughly every two or three weeks after the first of June to remove early molters. You don't have to handle each bird in the flock every time—but use a strong flashlight with a blue bulb to pick out the slackers when they are on the roost at night. The blue or daylight bulb is used so that you can check up on the pigmentation of the different parts of the bird. Continue doing this from the first of June to the first of October. On November 1st go over the flock again to select breeders.

Those who plan to cull just once a year will find July, August and September the best months in which to cull. The birds have been through most of their laying year and their performance has set

up signboards which even the inexperienced may recognize.

The age of the hen is one of the first things to consider in selecting a bird that you intend to hold for next winter's laying. It is not usually profitable to keep more than 35 per cent of the yearlings for layers the following year. Pullets lay more eggs than hens and lay a larger proportion of them during the season of high egg prices.

Making Preparations to Cull

To get hold of the birds some poultry raisers use a wire catching hook. The method has its disadvantages in that the flock is usually frightened and occasionally birds are injured. The use of a catching crate reduces the danger of injury to birds and makes your work easier.

Build a crate about 3 feet long, 2 feet wide and 18 inches high, with a drop sliding door in one end and a sliding door in the top. Put the end with the drop sliding door open next to the exit of the poultry house, cover the top with a blanket, and drive the hens into the crate. A screen door or gate is a big help in driving the hens into the coop.

Have crates or coops ready for all culls which are to be fattened or sold. To remove the hens from the catching crate, slide open the door in the top, thrust in the left hand, grab the hen's right leg and right wing and bring her out head first. This causes less excitement and brings her out in position ready for culling.

How to Hold Bird for Culling

For most effective culling, slide the first finger of your left hand between the hen's legs, so her body rests on the palm of the left hand with her head toward you. You can then examine her most conveniently.

PLAN FOR CULLING

Cull

Poor layers and all old hens.

Cripples and hens with broken-down abdomens or frozen toes.

The sick, quiet, inactive hens that spend much time on the roost.

The large, coarse-headed hens with sunken eyes.

The large, coarse hens with feathers extremely heavy for the breed.

All late-hatched immature pullets and those that are early hatched but much undersized.

All hens that stop laying and molt before September 1.

The persistent sitter.

All hens with solid, fat abdomens.

All hens that have bad habits (cannibals, feather-pullers, egg eaters).

All cockerels not needed for breeding.

All naked, slow feathering cockerels or pullets.

Keep

Strong, healthy, vigorous hens with short, neat heads and strong beaks.

The hens with long, deep, rectangular bodies and parallel top and bottom lines.

The hens with large, bright eyes, active appearance and short, well worn toe nails.

The hens with dusty, worn feathers, especially worn tail feathers, but having a bright healthy look.

The hens that molt late and those that molt rapidly.

The noisy, happy, friendly hens.

The early risers and those late to roost.

The vigorous hens with the faded beaks and shanks.

The hens with the thin pelvic bones spread wide apart.

The early-hatched, well-grown pullets.

Large, strong, active, quick maturing cockerels of desired variety, type and high-producing mothers.

Rapid growing, quick feathering, fast maturing stock.



Look to the Head

The head should be of medium length and depth, with strong impressive lines. The face should be full, with bright, intelligent, friendly, and expressive eye, indicating a sensitive and nervous organization. The skull should be wide, flat and deep, the width increasing uniformly from attachment of back to a point directly back of eye. A smooth and lean condition of the skin covering the face is desirable. The head should be neatly attached to the neck, avoiding all tendency toward throatiness. Thick, prominent jaws, narrow skulls, heavy wrinkled or shallow faces, small or sunken eyes, over-hanging eye-brows or combs with extremely narrow serrations are all undesirable.

The back should be wide and comparatively free from fat, and its width should carry well to the rear. A back that tapers decidedly or slopes sharply to the rear indicates small capacity. The back line should be approximately horizontal and the underline should be fairly straight.

The breast should be full, deep, and prominent. The neck should be fairly short, blending well with the head and body. The legs should be of moderate length. Round shanks are an indication of low productive ability.

The keel bone should be long. One that is gently curved is preferred to a straight keel.

Pigmentation Changes

(These should be observed by daylight)

In yellow skinned breeds the different parts of the body become white or bleached according to the length of time the bird has been laying. It should be recognized that all yellow color changes are dependent on management, feed, coarseness of the skin and size of the bird. A heavy bird fed on an abundance of green feed, or other material that will color the outer tissues deep yellow, will not bleach nearly so quickly as a smaller or more lightly colored bird. A bird with lustrous shanks does not fade so quickly as a dull shanked bird.

In yellow skinned birds the approximate length of time a hen has been laying is indicated as follows:

Approximate Time Bird Has Been Laying

<i>Faded</i>	<i>White</i>	<i>Very White</i>
Vent	3 days	1 week
Eye Ring	1 week	2 weeks
Ear Lobe	2 weeks	3 weeks
Beak	4 weeks	8 weeks
Shanks	15 weeks	20 weeks

Watch the Molt

When a hen starts to molt, she has usually finished her laying season. The low producer exhausts her vitality during the spring lay and begins to molt early in the summer—from May to August. She has a short producing season and spends most of the summer and fall growing new feathers, but laying no eggs. These hens are wasters of time, feed—and money.

The better layers lay right on through the summer, until October or November, when the molt is rapid and thorough.

Poor layers molt early, dropping one or two



The hen on the left is dropping her wing feathers one by one and is taking a long time to molt, grow new feathers and get back into production.

The hen on the right is molting several feathers at a time, and is growing new feathers rapidly without taking much time from laying.



wing feathers at a time. Cull out June, July and early August molters. Good layers molt later and more rapidly, dropping three to five wing feathers at a time.

In some cases, due to unfavorable conditions, a hen will undergo a partial molt and resume laying. This is likely to be true if the birds have been kept from a regular supply of their customary food for a short period.

Hens That Are Laying

To judge present egg production, examine the vent, abdomen, pelvic bones, comb, wattles, and ear lobes.

The vent of a laying hen is large, moist, dilated, bluish white in color, and tends to become oblong in shape. The surrounding tissue has a smooth, loose, pliable appearance. The vent of the hen that is not laying is small, contracted, yellow colored, and dry. The corners are drawn in, giving the vent a round appearance; the region around the vent is puckered, rough and hard.

If the comb, wattles, and ear lobes are large, full, plump, smooth, and waxy, the bird is laying heavily. If the comb is limp, the bird is laying slightly, but when the comb is dried down, especially at molting time, the bird is not laying at all. A warm comb is an indication that the bird is coming into production.

A good layer is active, intelligent, friendly, and more easily handled than a poor layer. A low producer is shy and flighty and is inclined to stay on the edge of the flock.

In nearly every flock there are some birds whose characteristics tell contradictory stories.

No set rules govern such cases. In the beginning give the hen the benefit of the doubt.

Give Your Hens a Good Home

Good housing of the flock is a good investment. Hens will live and lay some even if their living quarters are but mere roosting places. However, give hens a comfortable home and they'll repay you in extra eggs.

There probably isn't any one perfect type of house. Neither can it be said that there is any particular type that's adaptable to all parts of the country. The shed, the gable, and the two-story gable are all practical types. Build the size and type of house which comes nearest meeting your requirements.

Whether you remodel your present poultry house or build a new house, it is important that it should be: (1) dry, (2) well-ventilated, (3) free from drafts, (4) well-lighted, (5) convenient, (6) simple, (7) durable, and (8) pleasing to the eye.

Locate your poultry house on high, well-drained land in a convenient site to save steps, but not at the sacrifice of exposure, shelter, sunlight or drainage. Select your site and arrange adequately so that you may make addition in runs and houses at any time without the trouble of tearing down or moving.

The size of the house should be determined by the size of the flock. Figure 3½ square feet of floor space for Leghorns and 4 to 5 square feet for the larger breeds, such as Plymouth Rocks, Reds, Orpingtons and similar varieties.

If you are planning to remodel your present house or build a new one, write to your state agricultural college, or to a manufacturer of poultry house equipment. They will be glad to suggest the type of house best adapted to your conditions, and furnish you with complete plans of the house.

If Chicks Die Find Out Why



1. Chilling or Overheating:

A uniform temperature as directed in the Purina feeding and management chart should be maintained under the brooder hover. Don't allow the chicks to get too cold or too warm, as it will cause "pasting up" in back and heavy mortality.

2. Overcrowding:

350 baby chicks under a 52-inch diameter circular chick hover is plenty. Allow a square foot of brooder house floor space for every three chicks the first six weeks. Watch out about overcrowding.

3. Brooder Pneumonia, Bronchitis and Coccidiosis:

These three diseases cause the loss of thousands of chicks each year. The symptoms, causes and measures of control for Brooder Pneumonia and Bronchitis are given on pages 83 and 86; for Coccidiosis, on page 85.

4. Wrong Kind of Litter:

Darken the brooder house and put burlap sacking or paper on the floor under the hover for the first 72 hours. This is very important so that chicks do not pick up litter containing fiber, thereby compacting their digestive systems causing constipation, diarrhoea and heavy mortality. Do not use clover or timothy chaff litter on the floor. A high-grade peat litter is preferable. A high-grade wheat or oat straw, or shavings can be used after the chicks are a few weeks old.

5. Lack of Sunlight:

Sunlight has great value as a disinfectant. Sun in the brooder house in the early spring will cause the chick to exercise more, thereby eating and

drinking more and growing better. In the summer provide plenty of shade so the chicks can get away from the direct rays of the hot summer sun.

6. Filthy Runs:

Muddy, foul runs weaken chicks. They harbor eggs of worms and other parasites. Clean runs frequently, drain and lime. Keep chicks away from stagnant ponds, old manure, etc.

7. Lack of Ventilation:

Many chicks are "gassed" each year because of insufficient ventilation. Plenty of fresh air is necessary—don't skimp on it.

8. Drafts:

Poor ventilation causes drafts that bring on disease.

9. Dampness:

Keep the brooder house and litter dry. Let air circulate beneath floor of the colony brooder house.

10. Lack of Pure Water:

Chicks require large quantities of water. Give them clear, fresh water with the chill removed. Clean out and disinfect the drinking fountains daily with a solution made of 3 Purina Chlorena tablets to one gallon of water. Water is the cheapest feed. Don't skimp on water.

11. Lice or Mites:

See disease section for control measures.

12. Lack of Feeding Space:

Where there is a lack of hopper space the weak chicks are crowded out and die. When such chicks are opened one always finds empty crops and empty intestines. Allow one inch of mash hopper space for each baby chick.

13. Toe Picking, Tail Picking or Cannibalism:

Toe, wing or vent picking is caused directly by the inherent appetite of the chicks for flesh and blood and the desire to pick at objects that appear as food. It is often caused by crowding, bare floors, too much floor light, lack of ventilation, hot stuffy brooders, something lacking in the food, lack of enough feeder space and drinking fountain space, too much heat or too light a house. It is not a disease, but a vicious habit quickly learned by the entire flock of chicks from one or two that have just discovered the habit.

It is prevented and controlled as follows: (1) Feed Purina Chick Startena and Baby Chick Chow; (2) Keep the room temperature right and filled with fresh air; (3) Keep the chicks active (feed a little damp mash at 10 or 11 a.m.); (4) Hang up bunches of greens for the chicks to jump and pick at; (5) Get chicks outside as soon as possible; (6) Keep out rays of bright direct sunlight at the start; (7) The affected parts of chicks should be painted with roofing cement or a coal-tar preparation. Allow chicks more range or more room in house. Keep injured chicks away from flock. Provide more feeder space and drinking space. Watch heat carefully, do not allow house to get too hot. If too light, shade windows by painting the glass with blue paint.

14. Improper Incubation:

If chicks are not hatched properly they are likely to be weak and get a poor start in life.

15. Diarrhoea Other Than Bacillary White Diarrhoea:

Chicks often suffer from Diarrhoeas that are not of an infectious nature. Causes of such Diarrhoeas are: (1) Fine sand used on floor of brooder. (2) Sudden chilling or overheating. (3) Improper feed. RELIEF—Begin feeding Chick Chow (Scratch) up to 25% of all feed consumed daily; practice intermittent feeding of mash for several days. When diarrhoea clears up reduce scratch to normal and keep mash in front of them all the while.

16. Bacillary White Diarrhoea (Pullorum Disease):

Bowel trouble, droppings sticky and creamy in appearance, brownish in color, clinging to feathers around vent pasted up badly. Usually fatal under

ten days of age. Usually affects chicks within 10 days after hatching. Chicks show weakened condition, droopy wings and very drowsy. Post-mortem usually shows unabsorbed yolk. RELIEF—Extreme cleanliness and disinfection of all equipment with a solution made of 2 parts of Purina Cre-so-fec to 100 parts of water. Kill all weak, infected chicks. Remove all chicks immediately showing any signs of infection. Send live chicks to a competent pathologist, *as this is the only way a positive diagnosis can be determined.*

17. Sour Crop:

Crops filled with gas and water. Bad odor. RELIEF—Massage crop with chick's head held downward until crop empties. Give teaspoonful Epsom salts in quart of drinking water for one day for chicks affected.

18. Leg Weakness or Rickets:

Lack of sunshine or vitamin D in ration. RELIEF—Keep Startena Chow before chicks at all times. Feed exactly according to Purina directions.

19. Unabsorbed Yolks:

About one-third of the baby chicks that die the first week, do so because of not being able to absorb the yolks. The causes of unabsorbed yolks are: (1) Overheating or chilling. Both are a shock to the baby chick's digestion; a disturbance that stops further assimilation of the yolk. (2) Impaction from indigestible materials such as sand, grit, charcoal, chaff, rice hulls or cottonseed hulls. (3) Low vitality. (4) Improper feeding methods such as feeding too soon, too much grain, spoiled feed or wrong feed. (5) Diseases such as diarrhoea or pneumonia.

20. Weak Vitality:

Chicks must have a good strong vitality to have a chance to make a real start. It will pay you to feed your breeders Purina Chicken Chowder and Hen Chow for high hatchability and livability of chicks. If you buy chicks from a hatchery, insist that the chicks must come from Purina-fed breeders. Many hatcheries pay a premium for eggs from Purina-fed breeders.

When You Fail to Get Eggs Check Up on These Points

1. Have I culled my flock lately?

There are bound to be a few loafers in any flock. Cull them out as they eat up profits. (See Page 65.)

2. Is my house well ventilated, light, dry and roomy (3½ to 5 square feet per bird)?

Birds will do best when housing conditions are right. (See Page 73.)

3. Are my birds free from lice and mites?

These parasites sap the vitality of the flock and cut down profits. See control measures. (Page 93.)

4. Are my birds infested with intestinal worms?

If they are, they never will produce as they should. Control them and see your profits increase. (See Page 92.)

5. How about my Chowder hopper or mash feeder space?

Three inches of hopper feeding space should be provided for each bird. Have one Chowder feeder for 25 birds. (See Pages 20 and 22.) Are they placed in the light?

6. Are the water fountains full and near the feeders?

Chickens drink large quantities of water, especially in the summer. Have plenty of water handy all the time.

7. Do birds have plenty of grit and oyster shell?

A good grade of limestone grit (hen size) and Purina crushed oyster shell are essential. See that the birds have access to them all the time.

8. Is the house provided with clean, dry litter 4 inches deep on the floor?

Birds need exercise to keep in good health. Let them scratch Hen Chow out of a deep litter.

9. Were my pullets hatched early or late?

If they were hatched at the right time they will lay during the fall and winter when egg prices are high.

Hatch Asiatic breeds in January and February. American breeds in February and March. Mediterranean breeds in March and April.

10. Were pullets grown properly?

Chicks that grow rapidly during the growing period will have a much better show to come into good egg production in the fall when eggs are high in price. It is poor economy to feed a poor feed during the growing period. It means stunted growth and lower egg production later on.

11. Has there ever been any disease in the flock?

See the section on diseases and parasites beginning on page 84.

12. Did I feed twice as much Chowder as Hen Chow by weight, three times as much by measure, to my hens from June 1st to October 1st?

Birds need a cooling feed, rich in vegetable and animal protein in the summer to keep their bodies in good shape and grow new feathers. If you feed too much scratch feed at this time it will result in lower egg production later.

13. Are my pullets up in good body weight? (See page 77.)

14. Have I followed every detail of the Purina feeding and management plan to the best of my ability? (See pages 50 and 51.)

This plan is the result of experience of thousands of successful poultrymen. There is a right way to do everything. Follow the Purina Plan for best results.

Neck Molt

What Is the Cause?

It quite often happens that the early hatched pullets, particularly Leghorns, after laying very satisfactorily during the late summer and fall months will, along in December or January, go into a neck molt or partial molt, lasting from four to six weeks. They will recover quickly if

properly handled, and come back into egg laying in February.

This partial or neck molt, or winter molt as it is sometimes called, is frequently the result of allowing the birds to "lay themselves thin" and not keeping them up in body weight.

Keep Watch of Weight

It is best to put a colored band on the legs of five pullets. These pullets should be weighed together and their weight recorded. Every week or ten days these birds should be picked off the roosts at

night and their weight checked. If they are gradually increasing in weight they are being properly fed. When they show a tendency to lose weight, *watch out*. This is a danger sign.

How to Keep Up Body Weight

First: Use Purina Chick Growena and Purina Intermediate Hen Chow as your growing ration to bring pullets into early production in good body weight. Evidence received from Growena feeders shows that Growena brings Leghorns into 50 per cent production when five to six months old. Besides, the birds have a much larger body development, and much better body weight than you will get on ordinary growing mash.

Second: Bring pullets in off range and put them up in the houses as soon as you find the first pullet egg.

Third: Change from Growena to Chowder when pullets have been in the house two weeks.

Fourth: Get electric lights on the birds about November 1st to give the birds a longer day in which to eat plenty to maintain their body weight.

Fifth: Keep up their body weight by feeding heavily on Purina Hen Chow. No degerminated corn is used in Purina Poultry Chows be-

cause when you take the germ or heart out of the corn, you lose one-fifth of the protein and most all the fat. (Additional corn germ is put in Chicken Chowder). Put the highest-producing pullets in one pen and the second best pullets in the next pen. The highest-producing pullets should receive the greatest amount of Hen Chow. 100 Leghorn pullets under electric lights during the high producing months of November and December will consume 8 quarts of Hen Chow a day and oftentimes as much as 10 or even 12 quarts of Hen Chow.

Sixth: Sometimes it is impossible to get the birds (especially high producing Leghorn pullets) to eat enough scratch feed to keep up their body weight. For this reason many poultrymen feed at noon a fattening mash consisting of 1½ quarts of Purina Chick All-Mash Startena Chow or Startena and 1½ quarts of Purina Chicken Fat Chow to the 100 birds, and mixed with enough water to give it a mortar-like consistency.



Post-Mortem Examinations Are Easy to Make

It is easy to make a post-mortem examination. The most common poultry diseases are quite easily indicated through certain colors or sizes of the internal organs. You can generally find out what is causing the trouble in your flock by taking one of the worst looking birds and following carefully the illustrated directions given here. The symptoms given are the most striking post-mortem appearances that you are likely to meet, together with an indication of disease which may have been the cause. Try your hand on any sick birds which you might have and see how easy it is. After deciding what disease is troubling the bird, refer to the control measures beginning on page 84.

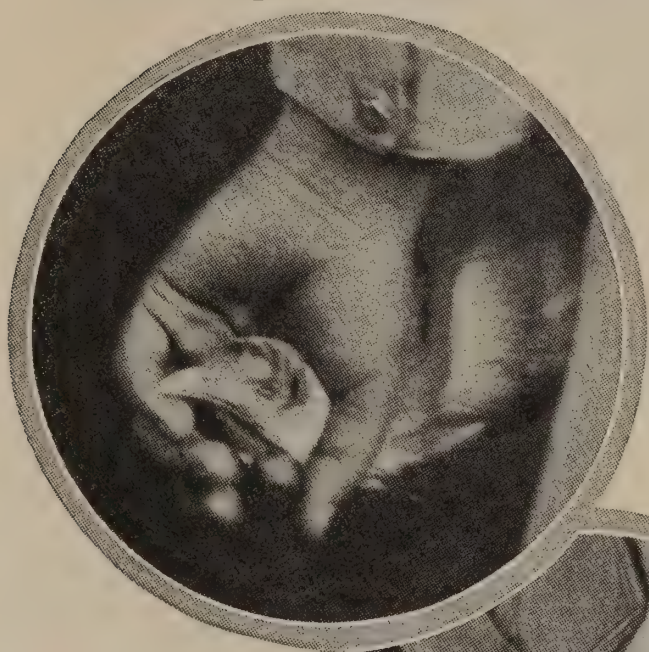
How to Make a Post-Mortem Examination

1. Preparing to Break Neck:

Grasp the legs and tip of the wing feathers in one hand so as to prevent the bird from flopping just after being killed.

2. Breaking Neck:

Grasp the head of the bird between your thumb and first finger with your little finger under the beak. Pull down, stretching the neck, and at the same time bend the head back sharply, dislocating the neck at the base of the skull.



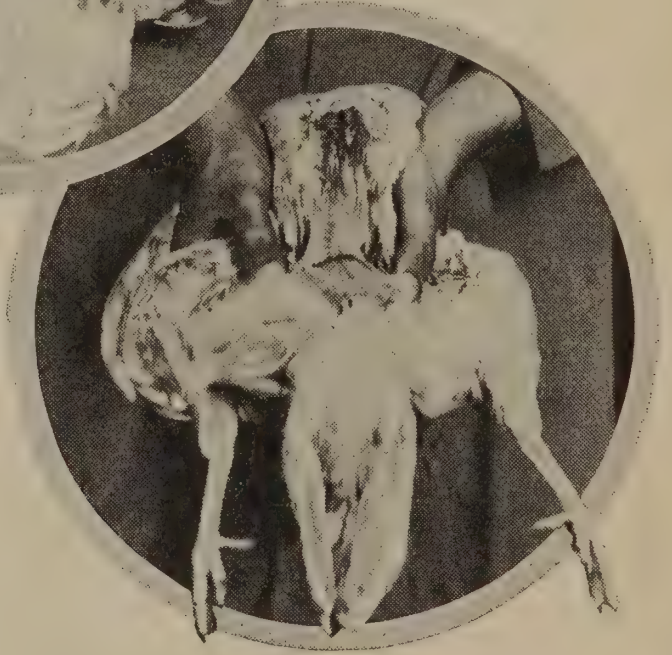
(1)

(2)





(3)



(4)

3. Pull Feathers from Breast Bone:

Dampen feathers on the breast and legs of the bird with water before pulling them from the rear end of the breast bone. This exposes this portion of the carcass making further examination easier.

4. Break Hip Bones Down:

This will allow the bird to lie flat on its back making further examination easier.

5. Cut Under and at Each Side of the Breast Bone:

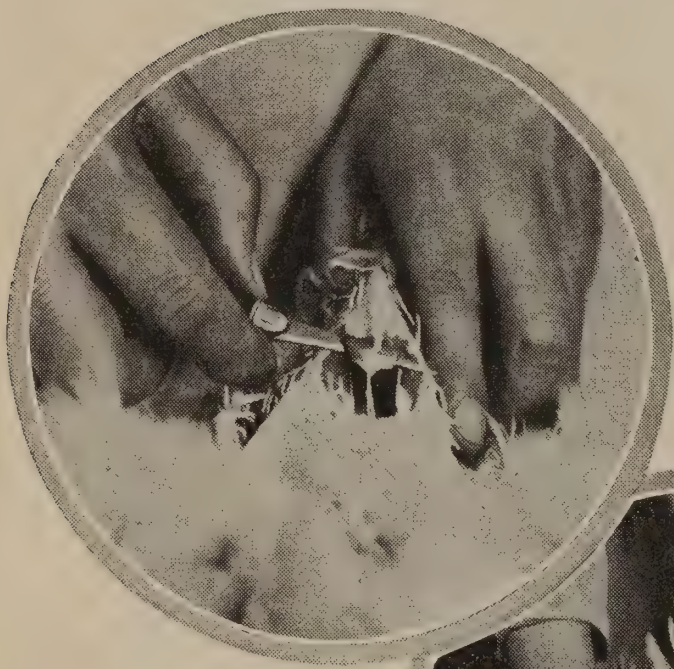
This makes an opening into the body cavity of the bird without cutting into the internal organs.

6. Break Breast Bone Forward:

This brings into full view the liver, gizzard and a portion of the intestines for further examination.

7. Examine Liver:

1. Raised yellow nodules and often enlarged
—Tuberculosis.
2. Congested, enlarged, dark green or black
—Cholera.



(5)

(6)



3. Spotted or marbled—Coccidiosis, Aspergillosis (brooder pneumonia).
4. Yellowish brown, frequently streaked with red (chicks)—Bacillary White Diarrhoea.

8. Lungs:

1. Test in water for congestion. If lung sinks it is congested.
2. Dark color and solid—Pneumonia.
3. Raised yellow nodules—Tuberculosis.
4. Cheesy nodules—Tuberculosis or Aspergillosis (brooder pneumonia).

9. Spleen:

1. Enlarged—Enteritis.
2. Spotted—Enteritis or Tuberculosis.

10. Gall Bladder:

1. Distended—Jaundice.

11. Intestines: (*See Illustrations, page 83*)

1. Raised nodules—Tuberculosis.
2. Congested—Ptomaine Poisoning.
3. Filled with mucus and inflamed—Enteritis, Chronic Coccidiosis, Cholera.
4. Filled with blood (young chicks)—Coccidiosis.
5. Filled with white worms, either round or flat—Intestinal worms.

12. Caeca:

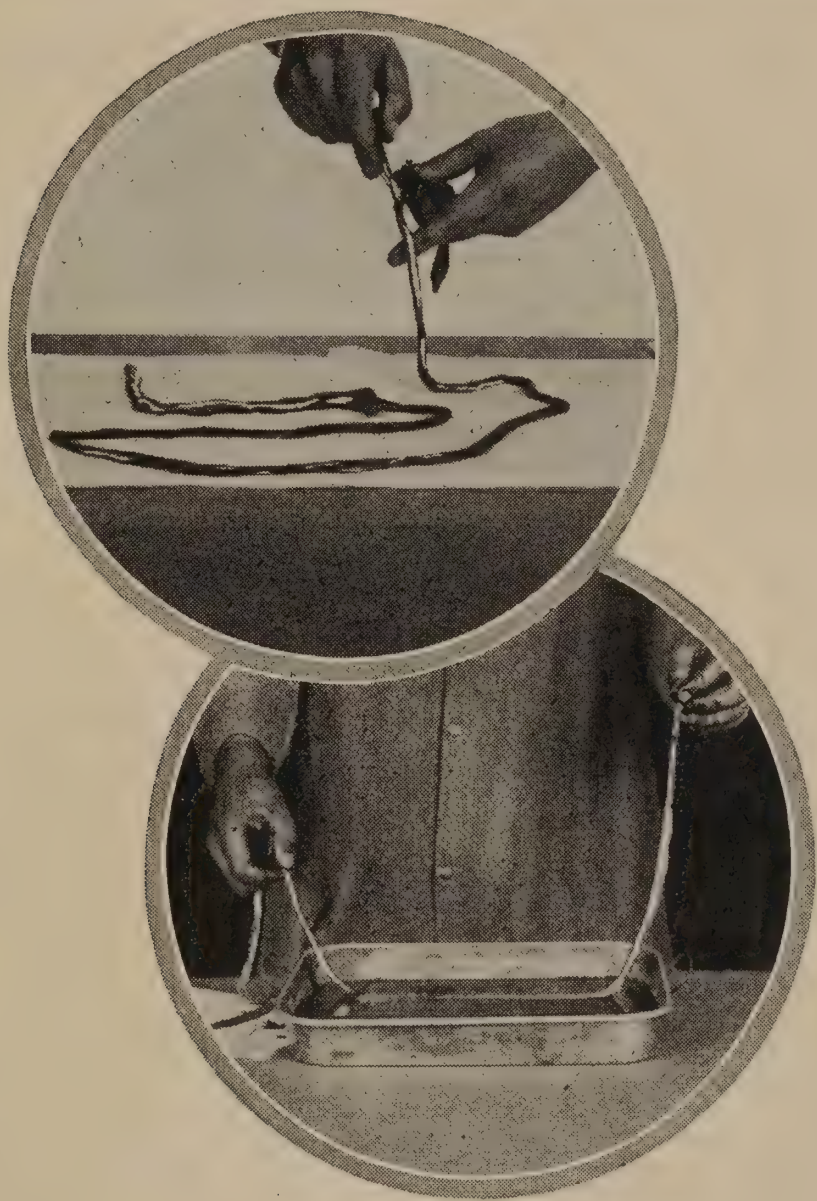
1. Partially filled with grayish soft material (not cheesy)—Bacillary White Diarrhoea.
2. Inflamed and filled with hard cheesy or bloody mass—Coccidiosis.

13. Kidneys:

1. Cheesy nodules—Tuberculosis.
2. Congested—Ptomaine Poisoning.
3. Inflamed—Cholera.

14. Ovary:

1. Discolored tumor-like yolks—Bacillary White Diarrhoea.



Way to Examine Intestines

Take a pan of warm water, cut the intestines off at the vent and at the gizzard, split them with a sharp knife and then run through the water. If you see segmented threads floating in the water perpendicular to the intestines, the birds have tape worms. If the white worms sink to the bottom of the pan of water, the birds are infested with round worms.

Prevention and Control of Poultry Disease and Parasites

In many cases diseases and parasites are the causes of failure in the poultry business. Diseases are to be prevented, rather than cured but the mark of a successful poultryman lies in that "sixth" sense of detecting oncoming disease conditions and in heading them off through proper treatment before great damage is done.

It is possible in most poultry diseases to observe some external symptoms on the birds that will indicate the nature of the trouble. Some of the things to look for are:

- 1. The head, more than any other part of the body, reflects the general condition of the bird. A healthy bird always has bright colored comb and wattles.
- 2. Condition of the flesh.
- 3. Condition of plumage. Ruffled unkempt plumage indicates an unhealthy bird.
- 4. Condition of the skin. The skin of a healthy bird is usually soft, smooth, and pliable.
- 5. Condition of the bowels.

Following is a brief summary of the symptoms, cause and control of some of the more common troubles with poultry:

Chick Diseases

Disease and Symptoms	Cause	Control
COLDS—Sniffling —diarrhoea—general unthrifty appearance —watery and swollen eyes—stuck eye lids.	Changes in temperature, overcrowded quarters —damp litter. Infection from older birds.	Keep temperature uniform. Start chicks roosting early. Avoid overcrowding. Keep things clean. Disinfect thoroughly with a solution made of 2 parts of Purina Cre-so-fec to 100 parts of water.
BROODER PNEUMONIA (ASPERGILLOSIS) —Birds become listless, breathe with difficulty, develop a fever and diarrhoea. Yellowish to greenish nodules on lining of bronchial tubes and lungs.	A fungus or mold. Aggravated by chilling or overheating.	Extreme sanitation. Provide clean litter and keep houses and yards free from filth. Avoid damp or dusty litter. Supply fresh clean feed—Purina All-Mash Startena, or Purina Chick Startena. Disinfect brooder house with Purina Cre-so-fec.

Chick Diseases—Continued

Disease and Symptoms	Cause	Control
BACILLIARY WHITE DIARRHOEA (PUL-LORUM DISEASE)—Chicks show bowel trouble, have peculiar sharp chirp, droppings pasted around the vent. Liver is usually yellowish brown, sometimes is spotted. Often is unabsorbed, soft yolk in chick and may be nodules in lungs.	A bacterium. This form is known to be transmitted from parents to off-spring thru the hatching egg. Also by association with infected chicks.	Practise extreme cleanliness and disinfect chick equipment with a solution made of 6 tablets of Purina Chlo-rena to 1 gallon of water. It is not possible to eradicate this disease unless you are willing to remove infected birds from the flock. Kill all weak, low vitality chicks as soon as discovered. Positive diagnosis can be made only by competent pathologist.
DIARRHOEA (COM-MON)—Causes heaviest death loss between the ages of 8 and 16 days. The chicks show weakened condition, drooping wings, and often have feathers around the vent pasted up with yellowish colored droppings. Post-mortem often shows unabsorbed yolks.	Weak vitality breeding stock. Chilling or overheating eggs. Chilling or overheating chicks. Using sand or clover chaff on floor before first feed of Startena. Failure to give chickswater with chill removed before first feed.	Extreme sanitary measures are necessary. Care for the chicks exactly according to the Purina Feeding and Management Chart. Destroy all weak, low vitality chicks as soon as they are discovered. Feed grain up to 25 per cent of total feed consumed; practice intermittent feeding of mash for several days. When diarrhoea clears up, reduce scratch to normal and again keep mash before them at all times.
COCCIDIOSIS—Attacks chicks and old fowls. Greatest damage to chicks at the ages of 3 to 10 weeks. Dullness, sleepiness, bloody diarrhoea, are common symptoms. Post-mortem shows spotted liver, contents of intestines yellow; cecum distended—contents cheese-like. Often spots cover walls of intestines. Generally fatal to chicks.	Small parasite which attacks the inside lining of the intestines, eating through into the blood veins, causing blood to escape into the intestines and pass out with the droppings. Also will be present in soil of long used poultry yards and spread through infected feed and drinking water.	Remove all feed from chicks for 8 or 10 hours. Clean house thoroughly. Give milk-flushing treatment. Mix together 40 lbs. of powdered butter-milk and 60 lbs. of Purina Startena (or Growena if chicks are six weeks old or over). Feed as dry mash with water to drink for from 3 to 5 days or until a decided flushing results. Clean the house thoroughly daily, and disinfect with a solution made of 2 parts Purina Cre-so-fec to 100 parts of water. In extreme cases repeat flushing treatment in 10 days or two weeks. Get chicks roosting early. Prevent crowding. For pullets 12 weeks old or older see treatment for Enteritis.

Chick Diseases—Continued; Diseases of Mature Stock

Disease and Symptoms	Cause	Control
INFECTIOUS BRONCHITIS —Peculiar breathing, the chicks gasping for breath. Usually a plug of cheesy matter in the trachea.	Not known.	Extreme sanitation. Keep chicks very warm. Smudge with a vapor treatment of good coal tar disinfectant, or with Oil of Eucalyptus; or spray the chicks two or three times daily with a formaldehyde spray composed of 10 parts Formaldehyde; 5 parts Glycerine; 85 parts water.
LEG WEAKNESS OR RICKETS —Bowed legs; softening of the beak. The chicks walk with a painfully sham-bly gait.	Lack of Vitamin D or sunlight. Improper balance of calcium to phosphorus in the chick's diet.	Purina Chick Startena and All-Mash Startena contain tested Cod Liver Oil and a balance of calcium and phosphorus that will prevent trouble of this kind. Get chicks outdoors in direct sunlight.
CANNIBALISM —Chicks pick each other, drawing blood either on body or toes.	Overcrowded conditions in brooder house, lack of sufficient Startena hopper feeding space and water fountain space, too much heat or too much light in brooder house.	Allow the chicks more range in the house or yard. Remove chicks that are bloody from the remainder of the flock at once and apply a coal tar preparation to injured parts. Provide more feed hoppers and water fountains. Do not allow the brooder house to get too hot. In extreme cases darken brooder house.

Diseases of Mature Stock

BRONCHITIS —Wheezing and sneezing, particularly among cockerels and pullets.	Overcrowded conditions and lack of ventilation.	Properly ventilate houses. Preventative measures of sanitation help control diseases. Use Purina Chlorena and Purina Cre-so-fec as directed.
ROUP (CONTAGIOUS) —Head and eyes swollen and watery; comb pale, diarrhoea often present.	Lack of good ventilation in the poultry house. Drafts, dampness, overcrowded conditions. Sudden heating and chilling. Exposure in transportation. Very common in the fall and early winter.	Kill and burn all birds that are badly affected. Remove the cause. Disinfect premises thoroughly with a solution made of 4 parts of Purina Cre-so-fec to 100 parts of water. See that poultry houses are well ventilated without drafts. Treat flock as described under Bronchitis. Give tonic of Epsom Salts and sulphur as directed under treatment for Chicken Pox.

Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
ROUP (DIPHThERIC) —Cankers develop in the mouth and throat. Yellow cheese-like masses may be few and small or numerous and large, covering the entire mucous membrane of the mouth. Mouth breathing with a rattling sound often occurs. Birds appear pale, show lack of appetite and appear unthrifty. Foul odor is often present.	Not known. It is known, however, to be contagious.	Prevention, of course, is the best way of controlling this trouble. Kill and burn all birds that are badly affected. Disinfect premises and houses with a solution made of 4 parts of Purina Cre-so-fec to 100 parts of water. Isolate others from the remainder of the flock and treat the same as for a case of Contagious Roup. Be sure of proper ventilation and dry floors. Call your Veterinarian.
CANKER —White cheese-like formation in mouth and throat.	Same as Diphtheritic Roup.	Same as Diphtheritic Roup.
FAVUS (WHITE COMB) —Grey-white spots on the comb, ear lobes, and wattles.	Caused by a fungus.	Apply tincture of iodine to diseased areas.
CHICKEN POX —Warty dark nodules appear on the unfeathered parts of the head. They look like tumors in the nasal passages and windpipe of the bird is affected with roup. It is thought to be a form of roup.	Poison present in sores and in blood of infected birds. Disease is spread through contact and through contaminated feed and water.	Kill and burn worst cases. Isolate remainder of affected birds. Scrape scales loose with sterilized blunt instrument. Disinfect bleeding surface with solution half iodine and half water. Mix $\frac{1}{2}$ pound Epsom Salts with $\frac{1}{2}$ pound dry powdered sulphur. Then mix with 6 pounds Chicken Chowder. Dampen to crumbly mash and give to birds in morning. This is sufficient for 300 birds for one treatment. Repeat in 7 days if necessary.
Scab inoculation for immunization from Pox is widely practiced in some parts of the country and found to be effective. Talk it over with your Veterinarian.		
LIMBERNECK (BOTULISM) —Bird loses control of neck. Head may drag or be held back over body. Staggering walk. Usually quite a number of birds in a flock are affected at once.	A bacillus which may be found in decayed food stuffs. Also the toxic larvae of certain green flies.	Remove the cause. Kill and burn affected birds. Do not feed table scraps, garbage, or other spoiled food material of any kind. Give physic of one heaping teaspoonful of Epsom Salts for each quart of drinking water.

Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
ENTERITIS —A severe form of diarrhoea. Birds become inactive and appear sleepy. Comb often pale in earlier stages and later becomes a dark reddish purple. Droppings often have a whitish, greenish, reddish or brown color. Post-mortem shows enlarged liver and spleen. Intestines full of mucus.	Bacterial infection coming from filthy condition. Foul drinking water, putrid meat, or decayed food, may cause digestive disturbances. May be caused by birds eating lye or salt.	Make an enteritis powder using 8 oz. powdered Catechu, 2 oz. powdered calcium phenol sulphonate, 2 oz. powdered sodium phenol sulphonate, 4 oz. powdered sulphate of zinc, making 16 oz. or 1 pound of powder. 1 pound will treat 100 birds.
RANGE PARALYSIS —Growing pullets often lose use of one or both legs. Birds may have deep yellow pigment and otherwise look all right. The feathers often become ruffled and dirty. Some birds are light in weight and eyes look blurred. Many birds are gray-eyed or blind. The appetite is usually good. This is generally thought to be chronic Coccidiosis and Enteritis combined.	Bacterial infection.	Same as for Enteritis.
TUBERCULOSIS —Fowl inactive, dull, pale, exhausted and often lame in advanced stages. Diarrhoea common. Birds very light in weight. Post-mortem: Liver and spleen spotted with yellow pus nodules. In advanced stages nodules are often found on the intestines. The liver is enlarged and has a rotten appearance.	A very small germ which multiplies in vast numbers, causing the formation of the nodules. The disease is highly contagious and spreads through contact of healthy birds with diseased ones or their discharges. Lack of proper ventilation.	Kill all sick birds by dislocating necks, and burn the diseased carcasses. Always use dropping boards in the house and keep them clean. Clean the houses and disinfect regularly with a solution made of 4 parts of Purina Cre-so-fec to 100 parts of water. Allow plenty of sunshine to enter house. Keep chicken houses dry. Use one 7.3 grain Bichloride of Mercury tablet to each gallon of drinking water given in a non-metal container. Give tonic of salts and sulphur as directed for Chicken Pox. Ventilate house right.

Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
CHOLERA —Attacks birds suddenly. Fowls often look perfectly well one day, and will be found dead under the roosts the next morning. Yellow or green colored droppings are often found around the vent. Post-mortem shows liver enlarged, generally dark green or black.	Most common where fowls are crowded. Germs may be spread by pigeons, sparrows, mice or rats. Germs enter body through contaminated feed and water.	All sick birds should be killed and burned at once. Poultry houses should be thoroughly cleaned and all droppings and litter burned. Houses should be thoroughly sprayed with a solution made of 4 parts of Purina Cre-so-fec to 100 parts of water. Call the local Veterinarian.
BLACKHEAD —Affects turkeys, resulting in drowsiness, lack of pep, loss of appetite, diarrhoea and sulphur colored droppings. In advanced stages the feathers become ruffled, wings droop and general inactivity results. Post-mortem shows enlarged liver covered with yellowish-green spots.	Small organism affecting intestine and liver. May also be found occasionally in chickens. Write University of Nevada, Reno, Nev., for Bulletin No. 61 on Common Diseases of Turkeys.	Extreme sanitary measures are necessary for control. Use one teaspoonful of commercial hydrochloric acid to each quart of drinking water given the poults. Use earthenware drinking vessels. Clean droppings and litter from the house every three days and burn them. Disinfect with a 2 per cent solution of Purina Cre-so-fec. Remove sick poults, kill and burn at once. Put remainder in clean quarters on fresh ground. Feed sparingly.
TYPHOID —Similar to fowl Cholera. Usually not so fatal. Birds lose their appetites and show a rise in temperature as indicated by increased thirst. Post-mortem: Liver is enlarged and darkened and covered with small greyish spots. Spleen is usually mottled in appearance and gall bladder distended with bile.	An infectious organism resembling one causing typhoid fever in man.	Same as for Fowl Cholera. Call the local Veterinarian.
INDIGESTION —Watery red droppings. Sickly appearance. Dull and listless. Symptoms are similar to those for Common White Diarrhoea.	Feeding an improperly balanced or inferior ration. Overfeeding. Lack of grit and eating decayed food.	Follow the Purina feeding and management chart. Supply plenty of grit. <i>Do not feed table scraps.</i> Give Epsom Salts and sulphur in mash. See directions for mixing these under Chicken Pox.

Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
CONSTIPATION —Dull, listless appearance. Loss of appetite. Birds stand with back arched; seem lame, walk with difficulty.	Lack of green feed, balanced ration, or exercise.	Remove obstruction with an enema of warm water, sweet oil or vaseline. In extreme cases give Epsom Salts—1 heaping teaspoonful per quart of drinking water—or 2 teaspoonsful of castor oil per bird. Follow the Purina feeding and management directions.
CROP BOUND —Crop distended and full of foul feed, lawn clippings, etc. Foul breath and discomfort plainly visible.	Obstructions in crop from overfeeding of fibrous feed or other fibrous material, such as litter, lawn clippings, etc.	Pour sweet oil down throat and work the contents of crop out by hand. If unsuccessful, open crop by slitting skin on the breast, remove contents, wash with disinfectant solution of potassium permanganate dissolved in water, and sew up opening in skin with linen thread. Keep birds on mash feed only for a few days after operation.
POISONING —Large number of birds in same flock showing darkened combs and wry necks. Postmortem shows erosions on inner surface of crop.	Excessive quantity of salt. Also various sprays, rock poison or rose-chafers may cause trouble. Use of metal fountains for medicated drinking water. Also sour milk or buttermilk if left in tin or galvanized vessels.	Of very little avail. Sweet milk can be given, followed by tablespoonful of castor oil. The birds should be enclosed in small area until source of trouble is located and removed. Call the local Veterinarian.
BUMBLEFOOT —Slow swelling of the foot of the fowl which results in the formation of an abscess or a hard tumor-like growth on the bottom of the foot.	Allowing birds to jump from high perches to hard cement floors; roosting on too narrow perches; or anything that would cause continuous bruising to the bottom of the foot.	Unless bird is valuable, dispose of it on the market at once. With valuable bird, foot may be lanced and core removed and Iodine, full strength, used to disinfect wound. Do not have perches or roosts more than four feet from the floor of the house and keep the floor covered with a deep litter at all times.
FROZEN COMBS —	Lack of the right kind of ventilation in the poultry house causing dampness and drafts.	Thaw out by rubbing comb with snow or by smearing comb or wattle with vaseline and rubbing with fingers.

Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
EGG BOUND —Listlessness, frequent attempts to lay, and often prolapse of the oviduct. Wings and tail usually droop.	Due to attempts to pass too large eggs. Over-fat condition, poorly balanced ration, weak muscles.	Give birds two teaspoonfuls of castor oil and inject sweet oil in egg passage. Feed Hen Chow in a deep litter to induce exercise.
PROLAPSE OF OVIDUCT —Lower portion of oviduct projects from the vent in a mass of red or purplish tissues.	Straining to lay a large (double yolk) egg or straining to lay when there is some obstruction in the oviduct. Feeding too much corn, or a poorly balanced scratch grain. Constipation.	Isolate the birds. Treat the oviduct with carbolated vaseline. The prolapsed organs should then be carefully replaced and cold water injected to relieve congestion and cause walls to contract. Feed lightly on Chicken Chowder for a few days until bird is cured. Give plenty of fresh water. Feed flock Hen Chow.
CANNIBALISM IN ADULT BIRDS —Many healthy birds are killed by other birds "picking out" the intestines.	It's a vicious habit.	Snip off the light transparent tip of the upper beak back to the "quick" or "base."
RUPTURED OVIDUCT —Bird often broken down in the abdomen. Eggs can often be felt inside the body of the bird. Also has a sluggish action and appears out of condition.	Breaking of the walls of the oviduct causing contents to escape into abdominal cavity. A broken eggshell in the oviduct may cut the oviduct wall.	Dispose of the affected bird at once. Keep premises sanitary at all times. Feed Purina Poultry Chows according to the Purina feeding and management chart.
BLOOD SPOTS ON EGGS —A blood spot found on yolk. Most commonly found in the spring of the year when laying is heavy.	Due to a rupture of little blood vessel connecting the yolk with the blood stream of the hen just before the yolk dropped into the oviduct ready to start the egg-making process.	Candle out eggs and sell only those that show no spots. Sell hens that lay the eggs showing blood spots if you can discover them.
SOFT SHELLED EGGS —	Lack of lime. A very nervous bird will lay soft shelled eggs no matter what is fed.	Keep Purina Crushed Oyster Shell before birds. Cull out the chronic layers of soft shelled eggs. Feed a moist mash at noon, made of 3 quarts of Startena (Mash or All-Mash) to the 100 birds.

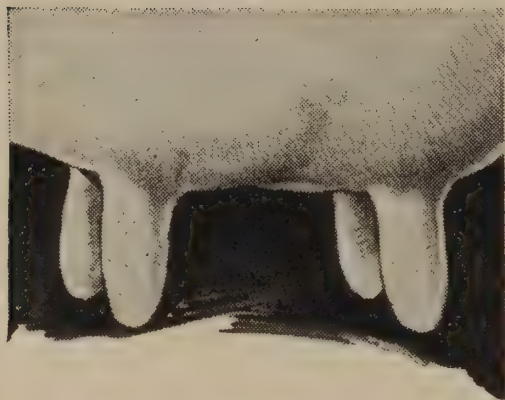
Diseases of Mature Stock—Continued

Disease and Symptoms	Cause	Control
FEATHER EATING —	Overcrowding of birds in brooder or laying house. Lice or mites. Lack of sufficient protein in some rations.	Feed Purina as directed in the feeding and management plan. Provide plenty of exercise. Get birds outdoors as soon as possible to prevent overcrowding. Examine for lice or mites.
EGG EATING—	Sometimes said to be caused by an insufficient supply of lime in ration (oyster shell) or too much light in the nests. When once started it spreads as all bad habits do and is hard to break up.	Have nests in the dark. Isolate birds that have the egg-eating habit. Kill incurable cases. Feed oyster shell, grit and Purina Poultry Chows.
GAPES—The birds sneeze and cough with a discharge of mucus from the mouth and nose. Affected birds become weak and show a loss of weight.	A small parasite worm which attaches itself to the internal surface of the windpipe and sucks blood from the mucous membrane, and obstructs the passage, interfering with breathing.	Prevention rather than cure is the best policy. Spade up infested ground. Apply slacked lime once a week until chicks are large. Extract parasites from affected chicks with small feathers soaked in kerosene or oil of turpentine. Keep chicks off the ground until they are four or five weeks old.
<i>Note: These parasites difficult to control. No one treatment can be said to be satisfactory in all cases. Write to United States Department of Agriculture, Washington, D. C., for Bulletin 1337.</i>		
INTESTINAL WORMS —Emaciated appearance of birds, ruffled feathers, often pasted with yellowish-colored droppings around the vent. In advanced stages birds often become lame.	Round or flat worms in the intestines. Caused by unsanitary surroundings, infested soil. The constant use of the same soil year after year is very conducive to continued trouble from these parasites.	Where you find bad infestation of worms, use an individual bird treatment. See your Purina dealer for his recommendations, and ask him for Purina Worm Capsules. They are about 100 per cent effective in removing round, hook, and cecal worms. Only partially effective against tape-worms.

External Parasites

Disease and Symptoms	Cause	Control
LICE — Restlessness. Birds become listless and thin and pick and scratch themselves. Bowel trouble is often evident in little chicks.	Carelessness, poor management, and lack of proper sanitation and control measures.	For large flocks nicotine sulphate applied on the roosts at night is effective. For individual treatment dust the birds with Purina Lice Powder. Disinfect thoroughly houses and premises with a solution made of 2 parts of Purina Cre-so-fec to 100 parts of water.
MITES (COMMON RED) —Birds appear weak and emaciated and sometimes desert the nest. During the day mites may be found in the cracks and crevices around the roosts, dropping boards and nests.	Blood sucking parasite.	Clean poultry house. Burn droppings and litter. Spray house with force spray. Use Purina Cre-so-fec as directed on the can.
MITES (SCALY LEG) —Birds have large irregular scales and masses on legs.	A very small mite which works under the scales on the legs. Can't be detected with naked eye.	Dip shank of bird in kerosene or crankcase oil. Do not get oil on feathers. If scales are bad, soak legs first in warm soapy water. Brush with stiff fibre brush before applying oil.
MITES (DEPLUMING) —The birds have a ragged appearance caused by pulling out of their own feathers due to irritation of mites. Attacks may check egg production and cause emaciation.	Parasite which lives at the base of the feathers.	Rub infested portions of the body with ointment made by mixing one tablespoonful of Purina Cre-so-fec to a cup of melted vaseline or lard and thoroughly mix. Do not turn the infested birds out into direct sunshine for 24 hours after applying treatment.
TICKS —Not found on birds during the day. Ticks hide in cracks and crevices of the house. Come out on the birds only at night. They are blood-sucking parasites causing emaciation and irritating annoyance.	Blood sucking parasites which breed prolifically. A poultry house once infested often becomes over-run with them.	Very difficult to combat. Usually complete destruction of infested hen houses by burning is necessary to control infestation. Before burning, however, try to control parasites by spraying according to the direction given for common red mites.

AROUND THE FARM!

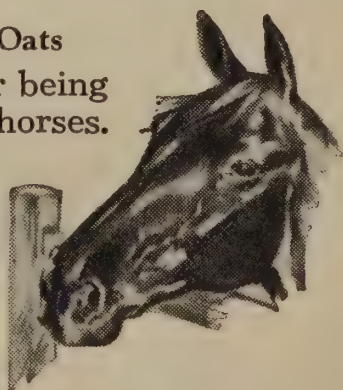


THE UDDER has a big job to do. In one year's time it must manufacture and store tons of milk. To do this, ton after ton of feed must be eaten, digested, turned into milk. If the feed contains just the right amounts of the numerous different

nutrients required, the process is easy and it takes less feed to produce each gallon of milk. Purina Cow Chows add to hay and grain just the things they lack. It's easy to see why Cow Chows cut production costs.

Costs Less Than Oats

Omolene has the reputation for being an exceptionally fine feed for horses. Horses like its sweet molasses taste. It is clean and digestible with a mildly laxative effect to keep horses in the best working condition even during heavy labor and hot spells. Measure for measure it's cheaper than good oats and higher in feeding value.



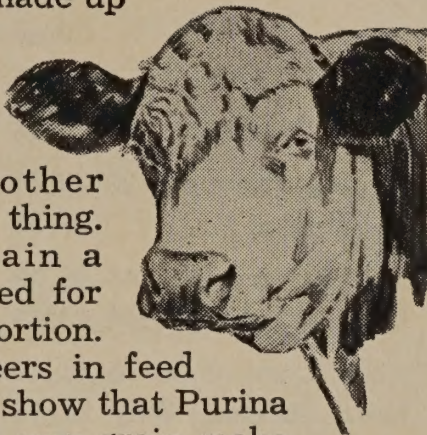
A Better Start



A little better feed often produces a lot better results in the sheep business. Take the matter of producing lambs. Purina Sheep Chow in Checker form and Lamb Chow contain the very things it takes to keep up the ewe's body and nourish the unborn lambs. That means more lambs and stronger lambs...and it means that the ewe will be in better shape to furnish milk aplenty for her offspring. A start like that will mean larger profits at market time.

CHOWS FOR ALL!

Grain plus a supplement made up of different kinds of protein is the most profitable feed for steers, showed the 1931 tests at the Iowa Experiment Station. Results in other years have shown the same thing. Purina Steer Chows contain a variety of proteins all mixed for you in just the right proportion. Records kept on 19,890 steers in feed lots throughout the country show that Purina Steer Chows fed with your own grain make cheaper gains than other common rations.



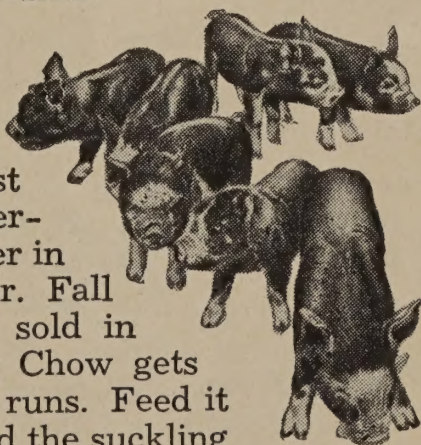
Variety for Rabbits

Rabbits are like human beings—they do better when they get a variety of things to eat. Rabbit Chow contains all of the things rabbits need because it's made of 10 ingredients. The new small-sized Rabbit Chow Checkers can be fed with even less waste than the old large size, and rabbits like them better.



Early to Market

Young pigs. If you can grow them out ready for market ahead of the runs, you'll be many dollars ahead. In Chicago for the past 27 years, hog prices have averaged \$1.37 per hundred higher in September than in December. Fall pigs bring higher prices if sold in April. Purina Pig and Hog Chow gets hogs to market ahead of the runs. Feed it to sows during pregnancy and the suckling period to get stronger litters and more milk for faster growth. Feed it with grain to growing pigs to get quicker gains...and cheaper gains, too.



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Life and Growth

ALL MASH STARTENA CHOW

CHICK STARTENA CHOW

CHICK CHOW

CHICK GROWENA CHOW

INTERMEDIATE HEN CHOW

Eggs and Health

EGG CHOWDER

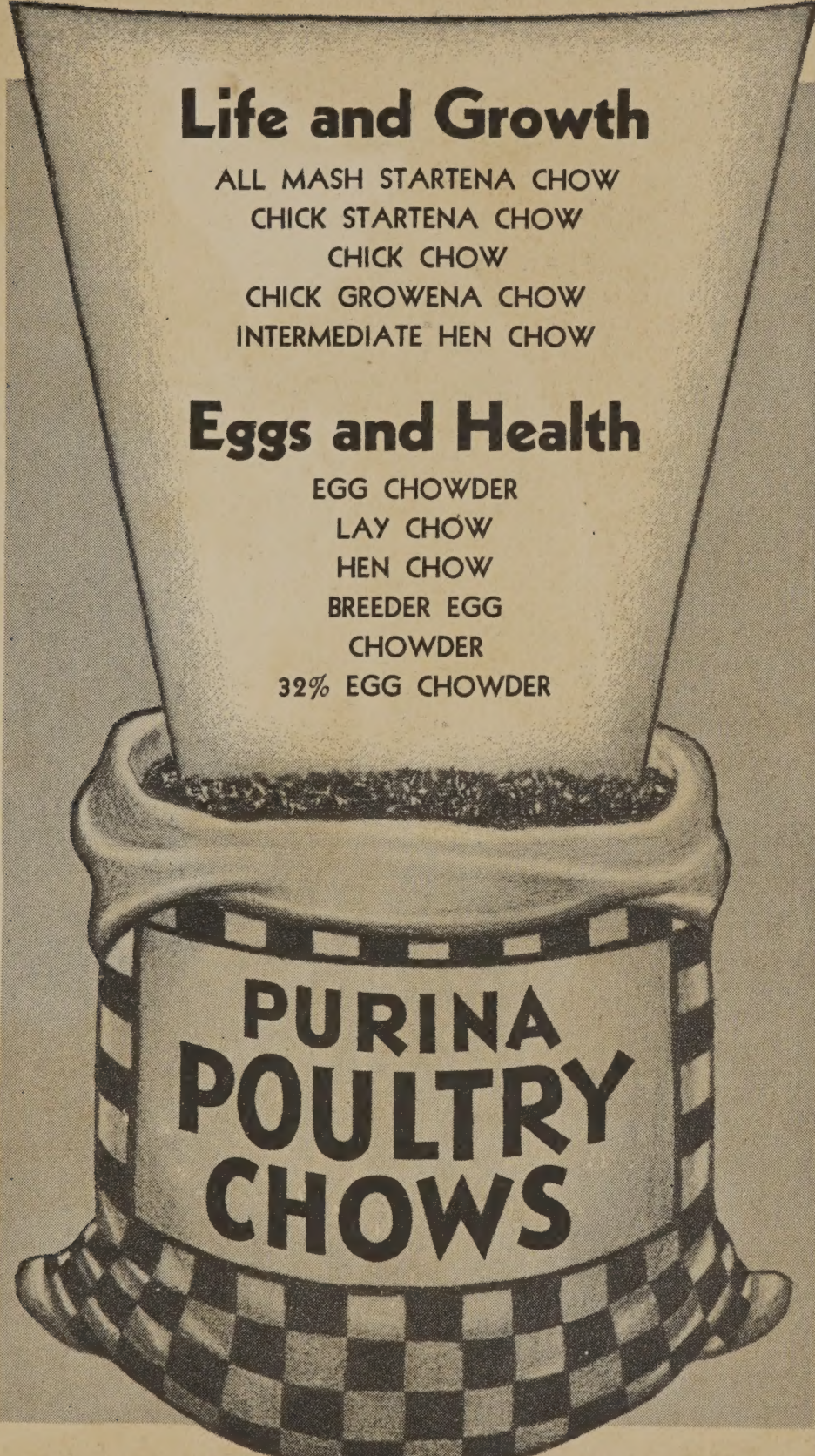
LAY CHOW

HEN CHOW

BREEDER EGG

CHOWDER

32% EGG CHOWDER



**PURINA
POULTRY
CHOWS**



21ST EDITION